Soil Survey Laboratory Memorandum No. 2 Washington, D. C., 1954

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Field and Laboratory Data on Some Podzolic and Associated Soils in Southeastern United States

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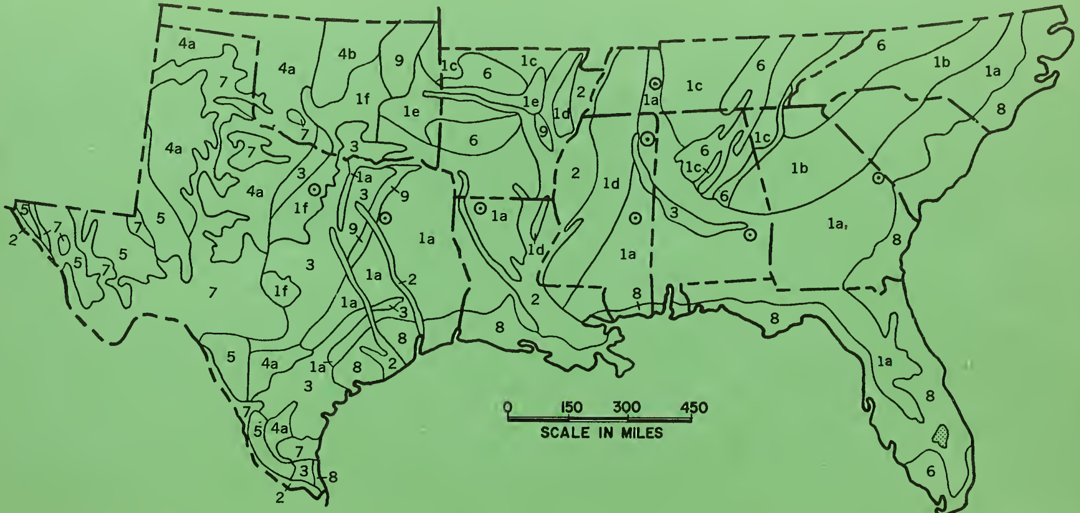

Soil Survey, SCS, USDA, 1953

TABLE OF CONTENTS

Introduction

Geographic relationships

Soil Type	Location	Profile Number
Axtell fine sandy loam	Kaufman County, Tex.	55
Axtell fine sandy loam	McLennan County, Tex.	53
Axtell fine sandy loam	McLennan County, Tex.	54
Boswell fine sandy loam	Barbour County, Ala.	40
Boswell fine sandy loam	Russell County, Ala.	41
Boswell fine sandy loam	Bienville Parish, La.	38
Boswell fine sandy loam	Lincoln Parish, La.	37
Boswell fine sandy loam	Lauderdale County, Miss.	39
Boswell fine sandy loam	Henderson County, Tex.	35
Boswell fine sandy loam	Henderson County, Tex.	36
Cahaba fine sandy loam	Houston County, Ala.	15
Cahaba fine sandy loam	Bienville Parish, La.	10
Cahaba fine sandy loam	Lincoln Parish, La.	11
Cahaba fine sandy loam	Clarke County, Miss.	13
Cahaba fine sandy loam	Jones County, Miss.	12
Cahaba fine sandy loam	Kaufman County, Texas	9
Cahaba fine sandy loam	Navarro County, Tex.	8
Cahaba sandy loam	Barbour County, Ala.	14
Leaf fine sandy loam	Barbour County, Ala.	49
Leaf fine sandy loam	Jenkins County, Ga.	51
Leaf fine sandy loam	Union Parish, La.	46
Leaf fine sandy loam	Williamsburg County, So. Car.	52
Leaf sandy loam	Henry County, Ala.	50
Leaf very fine sandy loam	Covington Co. Miss.	47
Leaf very fine sandy loam	Forrest County, Miss.	48
Ruston fine sandy loam	Jefferson County, Ga.	7
Ruston fine sandy loam	Union Parish, La.	3
Ruston fine sandy loam	Lauderdale County, Miss.	2
Ruston fine sandy loam, heavy subsoil phase	Henderson County, Tex.	5
Ruston fine sandy loam, heavy subsoil phase	Henderson County, Tex.	6
Ruston fine sandy loam, "iron pan phase"	Lincoln Parish, La.	4
Ruston sandy loam	Newton County, Miss.	1
Safford loam	Decatur County, Tenn.	31
Safford loam	Decatur County, Tenn.	32
Safford sandy clay loam	Henderson County, Tenn.	33
Safford very fine sandy loam	Henderson County, Tenn.	34
Shubuta fine sandy loam	Lauderdale County, Miss.	18
Shubuta fine sandy loam	Lauderdale County, Miss.	19
Shubuta fine sandy loam	Prentiss County, Miss.	21
Shubuta fine sandy loam	Prentiss County, Miss.	22
Shubuta fine sandy loam	Prentiss County, Miss.	23
Shubuta fine sandy loam	Prentiss County, Miss.	25
Shubuta silt loam	Lauderdale County, Miss.	16
Shubuta silt loam	Lauderdale County, Miss.	20
Shubuta very fine sandy loam	Lauderdale County, Miss.	17
Shubuta very fine sandy loam	Prentiss County, Miss.	24
*Starkville fine sandy loam	Oktibbeha County, Miss.	26
*Starkville fine sandy loam	Oktibbeha County, Miss.	27
*Starkville fine sandy loam	Oktibbeha County, Miss.	29
*Starkville fine sandy loam, shallow phase	Oktibbeha County, Miss.	30
*Starkville very fine sandy loam	Oktibbeha County, Miss.	28
Stephenville fine sandy loam	Parker County, Tex.	44
Stephenville fine sandy loam	Parker County, Tex.	45
Windthorst fine sandy loam	Erath County, Tex.	43
Windthorst fine sandy loam	Parker County, Tex.	42

INTRODUCTION

The first memorandum in this series stressed the need for making detailed field and laboratory data on soils widely available to soil scientists interested in the further development of the natural system of soil classification and in the making of interpretations about soil behavior. At the present time, the natural system is being reviewed carefully and critically in the United States with the hope of developing an improved scheme. The larger the number of competent scientists contributing toward this revision the better should be the final result.

Questions have been raised from time to time about the uniformity of soils in the wide sweep of Coastal Plain from the Atlantic Ocean to central Texas. Are there significant differences in Red-Yellow Podzolic soils from east to west? How uniform in profile are series recognized in a number of southern states? In an effort to provide better answers to these and related questions, studies of a number of Red-Yellow Podzolic and associated soils were initiated in the field and laboratory several years ago.

Although the results of the combined studies have been useful in correlation and have in part been published,[1] [2] many of the basic field and laboratory data are not widely available. It therefore seems desirable to report the data in a form which will make them available to many students of soils. As with the first memorandum in the series, it is hoped that the data in this publication may be useful to many people, both in further development of the classification and in the understanding of soil behavior. Thus, this is intended especially as a working tool for soil scientists concerned with the Red-Yellow Podzolic soils and some of the associated groups. The material is presented for students of soils with a minimum of interpretation and discussion.

It should be clear from the table of contents that certain representative soil series and other series that have posed problems in correlation were covered in the study. An effort was not made to include all important soils in the Coastal Plain segment of the Red-Yellow Podzolic region.

Sites for sampling were carefully selected by scientists familiar with the soil types, their geographic distribution, and their relationships to other soils. Duplicate soil profiles were sampled in a given locality as a general rule, though not in every instance. The identification of the soil types, the designation of horizons, and descriptions of the profiles are as accomplished in the field except where correlation changes have been made. Field descriptions of the profiles prepared at the time of sampling are reproduced with minor editing for clarification. In some instances, the field identifications of texture classes are not in agreement with the data obtained in the laboratory.

The study has been carried forward through the efforts of many individuals on the staffs of different organizations. Names of the persons who described and sampled the soil are listed with each profile description, whereas the names of persons who made the various laboratory studies are listed in this section of the memorandum.

Laboratory investigations were made by the following methods:

Particle size distribution was determined by the pipette method.[3] The pH was determined on a 1:1 soil suspension using a glass electrode.[4] Neutral normal ammonium acetate was used to extract the exchangeable bases and barium chloride-triethanolamine was used to extract exchangeable hydrogen.[4] The sum of the bases plus hydrogen was taken as the exchange capacity. Readily soluble phosphorus was determined by the modified Truog method.[4] Organic carbon was determined by dry combustion, whereas organic matter was estimated by loss after treatment with hydrogen peroxide.

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[1] Dyal, R. S., Martin, I. L., and Templin, E. H. Red-Yellow Podzolic Soils of the Southeastern United States: II. Character of the Clay Fractions of Ruston, Stephenville, Boswell, Windthorst, Cahaba, Leaf, and Axtell. Agron. Jour. 43: 482-487. 1951.

[2] Templin, E. H., Martin, I. L., and Dyal, R. S. Red-Yellow Podzolic Soils of the Southeastern United States: I. Morphology of the Ruston, Stephenville, Boswell, Windthorst, Cahaba, Leaf, and Axtell Series. Agron. Jour. 43: 476-482. 1951.

[3] Kilmer, V. J. and Alexander, L. T. Methods of Making Mechanical Analysis of Soils. Soil Science 68: 15-24. 1949.

[4] Peech, Michael, et al. Methods of Soil Analysis for Soil Fertility Investigations. U. S. Department of Agriculture Circular No. 757. 1947.

NOTE.--This memorandum was prepared by the Soil Survey, Soil Conservation Service, United States Department of Agriculture. Much of the work reported in this memorandum was done prior to the transfer of the Division of Soil Survey from the Bureau of Plant Industry, Soils, and Agricultural Engineering on November 15, 1952.

Clay (less than 2 microns) was separated by sedimentation after treating the soil with hydrogen peroxide to destroy organic matter, washing dissolved material from soil, and dispersing clay using ammonia as the deflocculating ion. Kaolinite and gibbsite contents of the clays were estimated from differential thermal analysis.[5] X-ray diffraction studies of the clays were made using oriented and unoriented[6] mounts with a Geiger counter X-ray spectrometer using iron K-alpha radiation. The oriented mounts were prepared by suspending the previously separated and dried clays (2 microns) in water using calgon as a dispersing agent. About 2 ml. of suspension was placed on each of three petrographic slides and dried at room temperature. One mount was given no further treatment, another was treated with glycerine and dried, and the third heated to 500° before X-ray diffraction patterns of the mounts were made. Quartz contents of the clays were estimated from the X-ray diffraction patterns, which were also used to substantiate observations made on the clays by other means. Surface area was measured by the ethylene glycol absorption methods[7].

The particle size distribution (mechanical analysis), contents of organic matter, and pH were determined by Susanne M. Spillman and E. C. Simpson. Organic carbon determinations were made by E. F. Miles. Readily soluble phosphorus as well as total and soluble potassium were determined by E. M. Roller. Cation exchange studies were made by R. S. Dyal and F. D. Davol and the former also made differential thermal analysis and surface measurements of the clays. The petrographic analyses were made by J. G. Cady who also prepared X-ray diffraction patterns of the unoriented samples, whereas X-ray diffraction patterns of oriented samples of the clays were prepared by R. S. Dyal.

The following abbreviations are used in the tables:

S + = sum of cations.
% B. Sat. = percent base saturation.
% O. C. = percent organic carbon.
% O. M. = percent organic matter.
Clay: less than 0.002 mm.
III: 0.02 - 0.002 mm. (International silt)
USDA silt: 0.05 - 0.002 mm.
VFS: 0.1 - 0.05 mm., very fine sand.
FS: 0.25 - 0.1 mm., fine sand.
MS: 0.5 - 0.25 mm., medium sand.
CS: 1 - 0.5 mm., coarse sand.
VCS: 2 - 1 mm., very coarse sand.

The field descriptions and laboratory data were assembled and compiled by R. S. Dyal, Roy W. Simonson, and J. K. Ableiter, Soil Survey, Soil Conservation Service, U. S. Department of Agriculture.

GEOGRAPHIC RELATIONSHIPS

Red-Yellow Podzolic soils comprise the major well drained group in the southeastern United States. The broad regions in which they are dominant as well as the regions in which other great soil groups are more extensive are outlined in Figure A, together with the localities in which samples were obtained. Regions of Red-Yellow Podzolic soils are identified in Figure A by the numbers 1a, 1b, 1c, 1d, 1e, and 1f. The major and minor great soil groups in each of the regions and sub-regions, notes on the topography, principal geological materials from which soils have been formed, the extent of each region or sub-region, and the states in which each occurs are given in the tabular legend which accompanies the map.

Two-thirds of the total area (320,000 square miles) dominated by Red-Yellow Podzolic soils lie in the Coastal Plain along the Atlantic Ocean and Gulf of Mexico. The great majority of soil profiles described in this memorandum come from this Coastal Plain (1a), but a few profiles were selected from an outlying region of Red-Yellow Podzolic soils, the West Cross Timbers area in north-central Texas (1f).

The principal soils representing the Red-Yellow Podzolic group were selected for study with two different purposes in mind. Widely distributed series were chosen to permit comparisons over long distances. Soils from sediments of contrasting texture were chosen so as to permit parallel comparisons of the effects of differences in climate and vegetation on soil character. Within the Coastal Plain in Alabama, Mississippi, Louisiana, and Texas, selections were made of the Ruston series from moderately sandy marine sediments in erosional uplands, the Cahaba series from comparable sediments in alluvial terraces, and the Boswell series from clayey marine sediments in erosional uplands. Included with data on these three series in this memorandum are the results of field and laboratory investigations of the Shubuta and tentative Starkeville series in eastern Mississippi and of the Safford series in the southern part of western Tennessee which were studied because of questions in correlation. These latter soils are also formed in erosional uplands from marine sediments that are high to moderately high in clay.

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[5] Hendricks, S. B. and Alexander, L. T. Minerals Present in Soil Colloids; I. Description and Methods for Identification. Soil Science. 48: 257-272. 1939.

[6] McCrerry, G. L. Improved Mounts for Powdered Specimens Used on the Geiger counter X-ray Spectrometer. Jour. Amer. Ceram. Soc. 32: 141-146. 1949.

[7] Dyal, R. S. and Hendricks, S. B. Total Surface of Clays in Polar Liquids as a Characteristic Index. Soil Sci. 69: 421-432. 1950.

The Stephenville and Windthorst series occur in the West Cross Timbers area of north central Texas, shown as 1f in Figure A. These soils have been derived from unconsolidated sediments which, though older, seem to be lithologically comparable to those giving rise to Red-Yellow Podzolic soils in the Coastal Plain along the Gulf of Mexico. In texture of underlying materials, the Stephenville and Windthorst soils are comparable to the Ruston and Boswell soils respectively. The region in which they occur is less humid than the regions in which the Ruston and Boswell series generally prevail. In many ways, it seems transitional from more humid forested regions to the east and less humid regions of grass and shrub vegetation to the west. The soils themselves seem to partake of this transitional character in that they resemble Red-Yellow Podzolic soils of more humid regions in some respects and the Reddish Chestnut and Reddish Prairie groups in other respects. The Stephenville and Windthorst soils have the morphology common to the Red-Yellow Podzolic group and thus represent an extension of that morphology into drier climates than occurs elsewhere in the United States. Information now available suggests that the Stephenville and Windthorst soils closely resemble the group identified as red and yellow Mediterranean soils around the edge of the Mediterranean Sea.

In addition to investigations of Red-Yellow Podzolic soils in the Coastal Plain, studies were also made of the Axtell and Leaf series, Planosols formed from clayey sediments in alluvial terraces. These studies covered three profiles of the Axtell series in Texas and of one or two of the Leaf series in each of Louisiana, Mississippi, Alabama, Georgia, and South Carolina. The two series were studied mainly because of correlation questions but in part to permit comparisons over a wide geographic range of wet soils formed from sediments of fine texture.

The classification of soil series into great soil groups follows the scheme outlined in the 1938 Yearbook of Agriculture, Soils and Men, as modified by the papers that appeared in Soil Science, Vol. 67, No. 2, 1949.

Tabular legend for map of broad soil regions giving major and minor soils, prevailing topography, principal geological materials, distribution, and approximate areas of regions

Symbol	Major soil groups[1]	Minor soil groups[1]	Prevailing topography[2]	Geological materials beneath soils	States where found	Approximate areas in square miles
1a	RYP	A,RBL	Rol-Und; hil-lev	Marine sediments-sands to clays	N.C., S.C., Ga., Fla., Ala., Tenn., Ark., La., Okla., Tex.	192,100
1a	RYP	A,RBL,L	Rol-Hil; und	Granites, gneisses, and schists	N.C., S.C., Ga., Ala.	41,200
1c	RYP,RBL	A,L,P	Rol-Und; hil	Limestones; some shales and sandstones	Ala., Tenn., Ark., Okla., Ga.	43,100
1d	RYP,A	P	Rol-Und	Loess, some marine sediments	Miss., Tenn., Ark., Ala.	30,400
1e	RYP,L	A	Hil	Sandstones and shales	Ark., Okla.	13,900
1f	RYP-RP	A,RC,L	Rol	Sandstones and sandy clays	Okla., Tex.	18,800
2	A,LHG,HG	GBP	Lev-Und	Alluvial sediments-sands to clays	La., Miss., Ark., Tenn., Tex., Okla.	48,700
3	R	A,P,RP	Und	Chalk and marl; clays	Tex., Okla., Ala., Miss.	50,900
4a	RC	L,A	Und	Calcareous sands and clays; shales	Tex., Okla.	79,800
4b	RP	A,P,L	Und	Clays (Red Beds)	Okla.	10,600
5	RB, RD	L,A	Und-Rol	Alluvium-calcareous clays and sands	Tex.	32,400
6	L (humid)	A	Moun-Hil, und	Igneous and sedimentary rocks	Ga., Ala., Ark., Okla., Fla.	55,100
7	L (arid)	RD,RB	Moun	Igneous and sedimentary rocks	Tex., Okla.	61,800
8	LHG, GWP,HG	B,A	Lev	Marine sediments-sands to clays	N.C., S.C., Ga., Fla., Ala., Miss., La., Tex.	91,800
9	P	A,RYP	Und, lev	Shales, sand-stones, lime-stones, clays	Okla., Tex., Ark.	10,900

[1] Great soil groups represented by the symbols are listed below. These groups are defined and described in "Soils and Men" 1938 Yearbook of Agriculture or in Soil Science, 67: 2, 1949.

A	Alluvial soils
B	Bog soils
GBP	Gray-Brown Podzolic soils
GWP	Ground Water Podzols
HG	Humic-Gley soils
L	Lithosols
LHG	Low Humic-Gley soils
P	Planosols
R	Rendzina
RB	Reddish Brown soils
RBL	Reddish Brown Lateritic soils
RC	Reddish Chestnut soils
RD	Red Desert soils
RP	Reddish Prairie soils
RYP	Red-Yellow Podzolic soils

[2] Capitalized abbreviations indicate the dominant kind or kinds of topography, whereas uncapitalized abbreviations indicate topography of lesser importance. Hyphenated combinations show equally important kinds.

Lev or lev	— Level	Nearly flat surfaces for most part
Und or und	— Undulating	Gentle slopes, chiefly
Rol or rol	— Rolling	Moderate slopes, chiefly
Hil or hil	— Hilly	Strong but not steep slopes, chiefly
Moun or moun	— Mountainous	Steep to precipitous slopes, chiefly

PROFILE NO. 1

Ruston sandy loam (45Miss 51-1)

Location: Newton County, Mississippi, 2.7 miles south of Chunky in cut-over forested upland.

Topography: General region is rolling to strongly rolling and highly dissected. Sample collected on 3 to 5 percent slope to northwest.

Vegetation: Thin cover of shortleaf and loblolly pine, with a scattering of oak, mainly white and red oak, and hickory. Fairly thick undergrowth of shrubs, grasses, and weeds.

Horizon	Depth Inches	Description
A_1	0-3	Grayish-brown (10YR 5/2), nearly loose, light sandy loam. The material is grayish-brown to pale brown (10YR 6/3) when dry. Roots fairly numerous but soil is not matted; upper part darker colored than lower part. Diffuse lower boundary.
A_2	3-7	Light yellowish-brown (10YR 6/4), yellow (10YR 8/6) when dry, nearly loose, light sandy loam; very slightly compact. Some variegation in color of organic stains and yellowish spots. Few roots present.
A_3	7-12	Variegated pale brown (10YR 6/3) and yellowish-red (5YR 5/6) transition layer of very friable sandy loam. When dry, the material is yellow (10YR 8/6) and reddish-yellow (7.5YR 7/6). Pinholes numerous; few large tree roots present.
B_1	12-15	Yellowish-red (5YR 5/6), reddish-yellow (5YR 6/8) when dry, very friable very light sandy clay loam. Few large roots present; pinholes numerous.
B_2	15-22	Yellowish-red (5YR 5/8), reddish-yellow (5YR 6/8) when dry, friable sandy clay loam; slightly plastic when wet. Small pinholes numerous; few root casts. Uncrushed surfaces slightly darker than crushed.
B_{31}	22-28	Yellowish-red (5YR 5/8), reddish-yellow (5YR 6/8) when dry, friable sandy clay loam, slightly lighter in texture than overlying material. Small pinholes numerous.
B_{32}	28-32	Yellowish-red (5YR 5/8), reddish-yellow (5YR 6/8) when dry, friable to very friable light sandy clay loam or sandy loam. Transitional to layer below. Pinholes fairly numerous.
C	32-37	Reddish-yellow (7.5YR 6/8), (7.5YR 7/8) when dry, very friable to nearly loose sandy loam with a few slightly cemented grayish spots.
C	37-63	Reddish-yellow (7.5YR 7/8), (7.5YR 7/6) when dry, loose, loamy sand with a few slightly cemented spots. B and C horizons grade into each without distinct boundary between them.

Sampled by: Alexander, Martin, Shearin, and Templin; November 9, 1945.

Described by: Shearin (Moist colors identified by Martin and Templin).

Note: This is an ideal Ruston profile. ILM

Ruston sandy loam, Newton County, Mississippi.
Lab. Nos. 46405-413 (45 Miss 51-1 thru 9)--Average annual ppt. inches 59.12.

Depth inches	Size classes %								
	Clay	III	USDA silt	VFS	FS	MS	CS	VCS	Horizon
0- 3	3.2	11.0	19.2	9.7	34.5	19.3	13.8	0.3	A_1
3- 7	5.1	13.8	23.2	9.9	42.5	7.2	11.9	0.2	A_2
7-12	8.5	15.4	24.8	8.4	30.1	16.5	11.5	0.2	A_3
12-15	14.9	15.1	24.4	7.8	26.7	15.4	10.6	0.2	B_1
15-22	18.3	15.8	25.1	6.6	25.5	14.4	9.9	0.2	B_2
22-28	15.7	13.8	22.0	6.7	27.6	15.8	11.9	0.3	B_{31}
28-32	10.5	11.6	18.1	7.3	30.3	18.5	14.9	0.4	B_{32}
32-37	6.5	9.6	15.1	9.0	35.9	19.4	13.8	0.3	C
37-63	4.1	6.3	9.4	9.4	41.8	20.7	14.2	0.4	C

Depth inches	M.E./100 g soil						% B. sat	pH	% O.C.	P ppm
	Ca	Mg	K	Mn	H	S+				
0- 3	.7	.3	.1	.06	1.8	3.0	40	5.3	.68	4.8
3- 7	.3	.2	.1	.05	1.3	2.0	35	5.2	.30	6.0
7-12	.2	.4	.1	.03	2.0	2.7	26	4.9		2.4
12-15	.5	.4	.2	T	5.2	6.3	18	4.8		0
15-22	.4	1.4	.2	T	5.5	7.5	27	4.7		1.6
22-28	.2	1.0	.3	T	4.3	5.8	26	4.6		2.4
28-32	.1	.6	.2	.01	4.2	5.1	18	4.7		2.8
32-37	.1	.3	.1	.04	2.3	2.8	18	4.8		3.2
37-63	T	.4	.2	.03	1.2	1.8	33	5.0		4.0

Horizon	Depth inches	Exchange capacity m.e/100 g	Surface M^2/g			% Inner surface	Kaolin %	Quartz %	Gibbsite %
			Total	Exterior	Inner				
A_2	3- 7						45		5
B_1	12-15	42					25		1
B_2	15-22	41	270	245	25	5	25	10	1
C	32-37	43					30		1
C	37-63		250	135	115	15	30	15	2

Results of X-ray diffraction patterns of oriented samples, 37-63" Kaolin, illite and 14A non-expanding mineral.

PROFILE NO. 2

Ruston fine sandy loam (45 Miss 38-1)

Location: Lauderdale County, Mississippi, about 250 feet south of New Hope Baptist Church, 9.5 miles south of Meridian on Highway No. 45.

Topography: Rolling to strongly rolling uplands. Sample collected on convex slope of 3 to 5 percent gradient.

Vegetation: Cut-over mixed pine and hardwood area. Probably never has been cultivated. Trees consist principally of shortleaf and loblolly pine, southern red oak, white oak, blackjack oak, hickory, and red gum. Sparse undergrowth of broom sedge, shrubs, and weeds.

Horizon	Depth Inches	Description
A_1	0-3	Dark brown to brown (7.5YR 4/2), grayish-brown (10YR 5/2) when dry, light fine sandy loam or loamy fine sand; nearly loose; poorly developed fine granular structure; well matted with roots and upper part contains considerable organic matter. A thin mat of leaves and other debris rests on the surface.
A_2	3-12	Brownish-yellow (10YR 6/6), yellow (10YR 8/6) dry, nearly loose light fine sandy loam, essentially structureless. Diffuse upper and lower boundaries. Worm pellets of darker material and soft charcoal specks are numerous, especially in upper part. A few roots and also a few worm casts present.
A_3 & B_2	12-15	This is a transition layer consisting of an interfingering of the layers above and below it. The material is variegated red (2.5YR 5/8) and reddish-yellow (7.5YR 7/8) very friable fine sandy loam in upper part and light sandy clay loam in lower part; with poorly developed fine and medium granular structure. The material is reddish-yellow (5YR 6/8) to pink (7.5YR 8/5) when dry. Fine pinholes fairly numerous; a few fine roots and dark specks present.
B_2	15-24	Red (2.5YR 4/8),(2.5YR 5/8) when dry, friable sandy clay loam. Displaced pieces are irregular fragments which with slight pressure break down into weakly developed coarse granular structure. The material is moderately plastic when wet, and hard to very hard when dry. A few roots, fine pinholes and dark specks are present.
B_{31}	24-30	Yellowish-red (5YR 5/8), reddish-yellow (5YR 6/8) when dry, very friable sandy loam with higher clay content than A_1 and A_2 Horizons. A few fine pinholes and a very few roots present. The material is slightly plastic when wet and hard when dry.
B_{32}	30-42	Red (2.5YR 5/8), light red (2.5YR 6/8) when dry, very friable sandy loam with a few dark colored ironstone concretions. A few pinkish-white (5YR 8/2) spots are present in lower part. The material is hard when dry.
B_{33}	42-54	Essentially the same as overlying layer in color and texture. Also contains a few dark colored ironstone concretions. Rests directly on underlying material.
C	54-61	This consists of dark colored ironstone plates with red (2.5YR 5/8) sandy loam between the plates. The plates are discontinuous and appear to occur in pockets; They range from 5 to 20 mm. in thickness and lie horizontally for the most part. When dry, the soil material is light red (2.5YR 6/8).
C	61-68	Dark yellowish-brown (10YR 4/8) very friable, sandy loam, hard when dry. The color is slightly lighter when dry. B and C horizons grade into each other without a district boundary between them.

Sampled by: Martin, Shearin, and Templin; November 6, 1945.

Described by: Shearin (Moist colors identified by Martin and Templin.)

PROFILE NO. 2

Ruston fine sandy loam, Lauderdale County, Mississippi.
Lab. Nos. 46672-680 (45 Miss 38-1 thru 9)--Average annual ppt. inches 53.36.

Depth inches	Size classes %								
	Clay	III	USDA silt	VFS	FS	MS	CS	VCS	Horizon
0- 3	6.6	16.3	27.5	5.0	41.8	13.6	4.6	0.9	A_1
3-12	5.1	15.7	24.7	5.5	47.5	13.8	3.1	0.3	A_2
12-15	10.0	30.7	24.4	5.1	45.1	12.5	2.6	0.3	A_3&B_2
15-24	25.0	11.7	17.4	4.0	39.1	11.5	2.4	0.6	B_2
24-30	15.5	10.7	15.9	4.5	48.5	12.5	2.5	0.6	B_{31}
30-42	17.2	8.8	12.9	4.7	49.6	12.7	2.4	0.5	B_{32}
42-54	19.7	6.9	7.7	4.6	51.1	14.7	2.0	0.2	B_{33}
54-61	16.7	4.0	8.8	2.3	51.5	17.2	2.9	0.6	C
61-68	16.1	1.4	2.5	2.5	60.8	16.5	1.5	0.1	C

Depth inches	M.E./100 g soil						% B. sat	pH	% O.C.	P ppm
	Ca	Mg	K	Mn	H	S+				
0- 3	3.6	1.0	.2	.07	6.3	11.2	44	5.3	3.70	6.4
3-12	.6	.3	.2	T+	.8	1.9	58	5.7	.53	4.4
12-15	.7	.7	.2	T	1.6	3.2	50	5.2	.32	4.4
15-24	1.0	1.5	.1	0	6.4	9.0	29	4.9	.41	5.2
24-30	.4	.6	.1	0	4.5	5.6	20	4.8		2.4
30-42	.1	.6	.2	0	3.7	4.6	20	4.8		.4
42-54	.1	.5	.3	T	4.0	4.9	18	4.9		2.8
54-61	.2	.5	.2	0	2.7	3.6	25	4.8		2.8
61-68	.1	.4	.2	T	2.6	3.3	21	4.8		2.8

PROFILE NO. 3

Ruston fine sandy loam (45La56-1)

Location: Old field west of gravel road immediately north and across road from small wooden church, 2.9 files north of Downsville, Union Parish, Louisiana.

Vegetation: The field has probably been idle 10 to 15 years. It has a thick cover of native grasses and weeds including broom sedge, Bermuda grass, needle grass, partridge pea, lespedeza, oxeye daisy, beggarweed, and ragweed. There is also a scattered growth of persimmons, sassafras, and young pine trees.

Topography: The region is a well dissected plain with relatively smooth interfluves and rolling to steep lands near the streams. The site of the profile is a slope of 4 to 5 percent to the north.

Horizon	Depth Inches	Description
A_p	0-6	Nearly loose, fine sandy loam with weak fine, granular structure. Pinholes and wormholes are common, and there are some variegations in color. The moist soil is brown (10YR 5/3) crushed, slightly darker uncrushed, and light gray (10YR 7/2) dry. The lower boundary is diffuse.
A_2	6-12	Nearly loose fine sandy loam with weak fine, granular structure. Pinholes are numerous and wormholes are common in the horizon. The moist soil has a variegated yellowish brown (10YR 5/4) and strong brown (7.5YR 5/6) pattern, uncrushed. The proportion of brown is higher in the lower part of the horizon. When dry and crushed the soil is very pale brown (10YR 7/3) in which there are a few lighter spots and streaks. Diffuse boundary.
B_1	12-16	This is a transitional horizon of very friable, light sandy clay loam with medium poorly blocky structure. The blocks break down readily into weak medium granular structure. Pinholes are common and wormholes are few in this horizon. The moist soil in place is largely red (2.5YR 4/6) with few variegations of strong brown (7.5YR 5/6). The light brown variegations are few in the lower parts of the layer. The dry soil is variegated reddish-yellow (7.5YR 6/6) and light gray (10YR 7/2) in place, reddish-yellow (7.5YR 7/6), when crushed. Diffuse boundary.
B_2	16-27	Friable and slightly plastic sandy clay loam with weak medium, blocky structure. The blocks break down readily to very weak medium granular structure. There are a few pinholes and wormholes. The moist soil is red (2.5YR 4/8) in place and becomes slightly lighter when crushed. The dry soil in place is yellowish-red (5YR 5/6) and when crushed is reddish-yellow (5YR 6/8).
B_3	27-36	Friable heavy sandy loam in which pockets of sandy clay loam occur. The horizon has a very weak coarse blocky structure with few pinholes and wormholes. The moist soil in place has a matrix color of red (2.5YR 4/8) to (2.5YR 5/8). Light yellowish-brown to brownish-yellow (10YR 6/4 to 6/6) spots and pockets, both circular and elliptical in cross section are common in the horizon. These have diameters or long axes ranging from 15 to 30 mm.
C_1	36-52	Friable sandy loam that seems to be massive and slightly indurated in place. (Simonson considers horizon a faint brittle pan.) There are a few pinholes in the horizon. When moist in place the soil is reddish-yellow (5YR 5/8), (slightly lighter when crushed) with spots of yellowish-brown (10YR 5/6). These spots are numerous, medium to coarse in size, and of medium contrast. The proportion of yellowish-brown increases with depth in the horizon and exceeds that of reddish-yellow in the lower part. When dry the soil is reddish-yellow (7.5YR 6/6) and very pale brown (10YR 8/4).
C_2	52-63	Friable, slightly plastic light sandy clay loam with weak medium, blocky structure. A few pinholes present. Moist and in place the soil has a dark red (10R 3/6 to 2.5YR 3/6) color marbled with brownish-yellow (10YR 6/6) and reddish-yellow (7.5YR 6/6). The pattern of marbling is intermediate in size and of medium contrast.

Sampled by: Alexander, Martin, Shearin, Simonson, Sturgis, and Templin.

Described by: Shearin and Simonson. June 23, 1945.

PROFILE NO. 3

Ruston fine sandy loam, Union Parish, Louisiana.
Lab. Nos. 45642-648 (45 La56-1-1 thru 7)--Average annual ppt. inches--51.93.

Depth inches	Size classes %								
	Clay	III	USDA silt	VFS	FS	MS	CS	VCS	Horizon
0- 6	4.7	20.9	30.5	4.2	49.8	10.4	0.4	0.0	Ap
6-12	6.7	28.3	35.3	3.7	45.2	8.8	0.3	0.0	A_2
12-16	12.9	28.0	36.8	3.2	38.1	8.7	0.3	0.0	B_1
16-27	18.6	20.7	28.1	3.5	41.9	7.7	0.2	0.0	B_2
27-36	10.5	17.6	25.5	4.2	49.2	10.3	0.3	0.0	B_3
36-52	8.1	18.3	24.9	3.9	52.4	10.4	0.3	0.0	C_1
52-63	25.0	16.6	22.0	2.7	40.3	9.7	0.3	0.0	C_2

Depth inches	M.E./100 g soil						% B. Sat	pH	% O.C.	P ppm
	Ca	Mg	K	Mn	H	S+				
0- 6	.9	.4	.2	.06	1.4	3.0	53	6.0	.48	2.0
6-12	.7	.4	.3	.03	.7	2.1	67	6.1	.21	8.0
12-16	1.8	.7	.2	.02	1.5	4.2	64	5.5		0.8
16-27	1.9	1.2	.3	T	3.6	7.0	49	4.9		2.8
27-36	.8	1.0	.2	.02	1.0	3.0	67	5.1		0.4
36-52	.4	.8	.2	T+	1.2	2.6	54	5.1		3.2
52-63	.8	2.7	.4	T	4.4	8.3	47	4.9		2.8

Horizon	Depth inches	Exchange capacity m.e/100 g	Surface M^2/g			% Inner surface	Kaolin %	Quartz %	Gibbsite %
			Total	Exterior	Inner				
A_2	6-12						15		0
B_2	16-27	38	250	75	175	25	25	10	0
C_2	52-63	33	220	115	105	15	35	15	0

Results of X-ray diffraction patterns of oriented samples.
16-27 Kaolin with some mixed layer mineral.
52-63 Kaolin with a 14 A non-expanding mineral.

PROFILE NO. 4

Ruston fine sandy loam, "ironpan phase",(45 La 31-3)

Location: Forested area immediately west of U.S. Highway 167, 3.3 miles south of Ruston, Lincoln Parish, Louisiana.

Vegetation: Principally shortleaf pines with a few hickory, southern red oak, post oak, red gum, and loblolly pine trees. There is a thin scattering of shrubs and grasses including buckhorn, sumac, and poison ivy beneath the trees. Area has been grazed.

Topography: The region seems to be a slightly dissected plain with stream valleys cut 10 to 15 feet below the level of the ridge crests. The profile sample site was a slope of 3 percent west-southwest.

Horizon	Depth Inches	Description
A_p	0-4	Very friable, fine sandy loam with weak fine granular structure; pinholes and wormholes are common. The moist uncrushed soil is dark grayish-brown (10YR 4/2), whereas the dry soil crushed is light to brownish-gray (10YR 6/2).
A_2	4-10	Very friable, weak fine granular fine sandy loam in which pinholes, wormholes, and small worm pellets of darker material are numerous. The moist soil in place is light yellowish-brown (10YR 6/4) with small flecks of strong brown (7.5YR 5/6). The flecks are few in the upper part, common in the lower part of the horizon. The dry soil is pale yellow (2.5Y 7/4 to 8/4) when crushed.
B_1	10-13	This is a transitional horizon of friable, heavy sandy loam with very weak medium blocky structure.. Pinholes and wormholes are common. The moist soil in place is yellowish-red (5YR 5/8) with some mottlings of light yellowish-brown (10YR 6/4) in the upper part. The dry crushed soil is reddish-yellow (7.5YR 7/8). Diffuse boundary.
B_2	13-21	Friable sandy clay loam with weak medium blocky structure. There are a few pinholes and a few black concretions 3 to 4 mm. in diameter. The moist soil is red (2.5YR 4/8) to yellowish-red (5YR 4/8) in place and yellowish-red (5YR 5/8) when crushed. The dry crushed soil is also yellowish-red to reddish-yellow (5YR 5/8 to 6/8). Diffuse lower boundary.
B_{31}	21-26	Friable sandy clay loam with very weak medium blocky structure in the upper part of the horizon but massive in the lower part. There are a few pinholes. There are a few darker faces on blocks in the upper horizon. The moist soil in place is yellowish-red (5YR 5/8) and it is slightly lighter when crushed. When dry the soil is reddish-yellow (7.5YR 6/8). Diffuse boundary.
B_{32}	26-37	Very friable, heavy sandy loam which is essentially structureless and contains a few small gravel 10 mm. in diameter. The moist soil is strong brown (7.5YR 5/8) in place and becomes slightly lighter when crushed. The dry, crushed soil is reddish-yellow (7.5YR 6/8). Distinct boundary.
	37-46	This is the ironpan horizon which consists of soil material between ironstone pieces. The plates are mainly dark red (2.5YR 3/6) with some thin layers of yellowish-red (5YR 5/8). They range from 3 to 10 mm. in thickness, lie horizontal for the most part and are discontinuous but make up a large part of the volume of the horizon. The plates are numerous enough to form a distinct hardpan. Soil material between the plates is a friable sandy clay loam with a mottled pattern of strong brown (7.5YR 5.8) and pale yellow (2.5Y 7/4) when moist in place. When crushed dry the soil is brownish yellow (10YR 6/8). Distinct boundary.
C	46-58	Thinly stratified silty clay, silt, and fine sand. The soil is firm, moderately plastic, and hard or very hard. In place, the moist soil is uniformly mottled brownish-yellow (10YR 6/8) and yellowish-red (5YR 5/8). The pattern of mottling is fine and of a medium contrast. When dry and crushed the soil is brownish-yellow (10YR 6/8).

Sampled by: Alexander, Martin, Shearin, Simonson, Sturgis, and Templin.

Described by: Shearin and Simonson. June 23, 1945.

PROFILE NO. 4

Ruston fine sandy loam, "iron pan phase," Lincoln Parish, Louisiana.
Lab. Nos. 45649-656 (45La31-3-1 thru 8)--Average annual ppt. inches--51.93.

Depth inches	Size classes %								
	Clay	III	USDA silt	VFS	FS	MS	CS	VCS	Horizon
0- 4	5.4	17.8	29.6	12.0	35.1	15.5	2.0	0.4	A_p
4-10	5.4	19.3	30.9	12.1	34.3	15.3	1.8	0.2	A_2
10-13	15.8	18.6	29.1	11.1	30.8	11.6	1.4	0.2	B_1
13-21	30.3	15.4	23.0	9.1	26.0	10.3	1.1	0.2	B_2
21-26	22.5	12.9	21.2	11.1	30.8	13.0	1.1	0.3	B_{31}
26-37	18.5	10.6	19.3	12.6	33.2	14.6	1.7	0.1	B_{32}
37-46	16.5	9.0	22.1	17.9	27.5	12.3	2.3	1.4	
46-58	29.7	7.8	26.5	20.3	12.2	6.8	2.0	2.5	C

Depth inches	M.E./100 g soil						% B. sat	pH	% O.C.	P ppm
	Ca	Mg	K	Mn	H	S+				
0- 4	2.5	.8	.1	.06	4.7	8.2	43	5.6	1.78	9.2
4-10	.6	.4	.1	.01	1.3	2.4	46	5.8	.43	4.8
10-13	.8	1.2	.3	T	3.1	5.4	43	5.1	.28	3.2
13-21	.5	1.7	.5	T	7.7	10.4	26	4.7	.30	2.8
21-26	.1	1.5	.3	0	5.9	7.8	24	4.7		2.8
26-37	.1	.8	.3	0	4.5	5.7	21	4.8		0.8
37-46	.1	1.2	.2	T	3.7	5.2	29	4.8		4.8
46-58	.1	.9	.2	0	6.9	8.1	15	4.8		1.2

PROFILE NO. 5

Ruston fine sandy loam, heavy subsoil phase (4544107-5)

(This soil is heavier in the upper part of the subsoil (11 to 27 inches) and is also somewhat redder in color than is typical for Ruston fine sandy loam. The color approaches that of the Orangeburg and Magnolia soils.)

Location: Henderson County, Texas; 4 1/2 miles northwest of Eustace on US Highway No. 175 about 400 feet west of the floodplain of a small creek. Sample was collected on the highway right-of-way adjoining an idle field. Area is about 100 feet wide and several hundred feet long. This location is in the post oak belt of northeast Texas within the outcrop of the Wilcox formation.

Vegetation: Moderately dense cover of native grasses and weeds including Bermuda grass, needle grass, Johnson grass, little bluestem, partridge pea, exeye daisy, and ragweed.

Topography: Convex slope of 4% gradient, sloping southeast, in gently rolling erosional upland. Topography of the uplands of general region is undulating to rolling with some strongly rolling and hilly slopes bordering the drainageways.

Horizon	Depth Inches	Description
A_p	0-6	Brown (10YR 5/3) when moist, very light gray (10YR 7/2) when dry, nearly loose light fine sandy loam. Roots are numerous and well distributed throughout the horizon.
A_2	6-11	Yellowish-brown (10YR 5/4) when moist, very pale brown (10YR 8/3) when dry, nearly loose light fine sandy loam with small clay pockets 2 to 6 mm. in diameter in the lower half of the horizon. Roots are less numerous than in the layer above. The lower boundary of this horizon is well defined though wavy.
B_{21}	11-19	Red (2.5YR 4/8) when moist, yellowish-red (5YR 4/8) when dry, sandy clay. Uncrushed surfaces are slightly darker than when crushed. The material is friable when moist and breaks down readily into moderately developed medium blocky aggregates. It is moderately plastic when wet and hard to very hard when dry. Fine holes less than 1 mm. in thickness are common and there are a few dark streaks along root and worm channels and on the natural breakage surfaces.
B_{22}	19-27	About the same as overlying horizon except the lower part is lighter in texture, contains a few low contrast fine mottlings of reddish-yellow (7.5YR 6/8), and has less well developed structure. This grades into the underlying horizon.
B_{31}	27-35	Red (2.5YR 4.5/8) with very faint fine reddish-yellow mottlings (7.5YR 6/8) when moist, red (2.5YR 5/8) when dry, sandy clay loam with poorly developed medium and coarse blocky structure. Uncrushed surfaces are slightly darker than when crushed. The material is friable when moist, slightly plastic when wet, and slightly hard, to hard when dry. Fine holes less than 1 mm. in diameter are common. This grades into the underlying material.
B_{32}	35-43	Red (2.5YR 5/8) finely mottled with brownish-yellow (10YR 6/6) and pale yellow (5Y 7/4) when moist, red (2.5YR 5/8) when dry, massive loam or light sandy clay loam. It is friable when moist. Mottlings are fine and of low to medium contrast, and somewhat reticulate in arrangement. A very few fine holes are present. This grades into the material below.
C	43-52	Heavy sandy loam or loam essentially structureless. When moist the colors are essentially the same as in the overlying horizon but the brownish-yellow and pale yellow make up a greater portion of the mass. There are a few coarse mottlings of brownish-yellow (10YR 6/8) in the lower part. When dry the material is strong brown (7.5YR 5/6). It is very friable when moist. This grades into the material below.
C	52-65	Yellowish-red (5YR 5/8) highly and finely mottled with reddish-yellow (5YR 6/6) and pale yellow (5Y 7/4) when moist, strong brown (7.5YR 5/6) when dry, essentially structureless sandy loam. It is very friable when moist. Mottlings are of medium contrast.
C	65-72	Coarsely mottled yellowish-red (5YR 5/8), pale yellow (5Y 8/3) and dark brownish-yellow (10YR 6/8) intermingled loamy sand, sandy loam, and sandy clay loam. It is very friable when moist. Colors are about the same when moist as when dry. Mottlings are of medium contrast.

Sampled and described by: Alexander, Martin, Shearin, Simonson, and Templin; June, 1945

PROFILE NO. 5

Ruston fine sandy loam, heavy subsoil phase, Henderson County, Texas.
Lab. Nos. 45594-602 (4544107-5-1 thru 9)--Average annual ppt. inches--35.53.

Depth inches	Size classes %								
	Clay	III	USDA silt	VFS	FS	MS	CS	VCS	Horizon
0- 6	3.3	4.3	12.4	18.5	59.2	6.1	0.5	0.0	Ap
6-11	5.0	7.4	17.9	17.5	52.8	5.9	0.7	0.2	A_2
11-19	36.5	6.7	13.8	11.3	34.3	3.8	0.3	0.0	B_{21}
19-27	35.2	7.4	13.6	10.7	36.0	4.1	0.4	0.0	B_{22}
27-35	28.4	6.7	12.8	11.1	41.8	5.4	0.5	0.0	B_{31}
35-43	23.2	4.7	8.4	8.4	50.6	8.5	0.9	0.0	B_{32}
43-52	21.0	2.7	4.0	5.2	55.8	12.4	1.6	0.0	C
52-65	18.1	1.4	1.8	3.7	63.8	11.5	1.1	0.0	C
65-72	16.2	1.0	1.3	2.8	59.2	19.1	1.4	0.0	C

Depth inches	M.E./100 g soil						% B. sat	pH	% O.C.	P ppm
	Ca	Mg	K	Mn	H	S+				
0- 6	1.0	.3	.3	.04	.9	2.5	64	6.6		3.2
6-11	.9	.4	.2	.01	.4	1.9	79	6.8		2.8
11-19	4.4	4.0	.5	T	6.5	15.4	58	4.8		0
19-27	2.4	3.5	.4	T	8.7	15.0	42	4.5		3.2
27-35	1.6	2.7	.3	T	8.5	13.1	35	4.5		3.2
35-43	1.2	2.2	.3	T	6.4	10.1	37	4.5		2.8
43-52	1.2	2.0	.2	T	6.3	9.7	35	4.6		2.8
52-65	1.6	2.0	.3	T+	4.4	8.3	37	4.7		4.4
65-72	1.8	1.8	.3	T+	3.6	7.5	52	4.8		6.0

Horizon	Depth (inches)	Exchange capacity m.e/100 g	Surface M^2/g			% Inner surface	Kaolin %	Quartz %	Gibbsite %
			Total	Exterior	Inner				
A_2	6-11		130	50	80	10	20		nd
B_{22}	19-27	43	295	115	180	15	30	5	nd
C	52-65	46					30		nd

Results of X-ray diffraction patterns of oriented samples
19-27 Kaolin and some mixed layer mineral.

PROFILE NO. 6

Ruston fine sandy loam, heavy subsoil phase (4544107-6)

(The upper part of subsoil, 13 to 19 inches, is heavier than typical for Ruston fine sandy loam).

Location: Henderson County, Texas; 6.8 miles northeast of Athens on State Highway No. 31 just north of highway in an idle field. Owner says field has been idle for 30 years. Area is about 100 feet wide and less than 100 feet long on the break between Bowie fine sandy loam on the north and Caddo or Bibb soils on the south. This location is in the post oak belt of northeast Texas within the outcrop of the Mt. Selman formation.

Vegetation: Moderately dense cover of native grasses and weeds including crabgrass, Bermuda grass, bluestem or broomsedge, needle grass, oxeye daisy, wild carrot, and ragweed.

Topography: Convex surface of 5% gradient, sloping east and southeast, in erosional upland. Topography of general region is undulating to gently rolling on the divides and rolling to strongly rolling, bordering the drainageway.

Horizon	Depth Inches	Description
A_p	0-4	Dark grayish-brown (10YR 4/2) moist, light gray (10YR 7/2) when dry, nearly loose fine sandy loam with poorly developed fine granular structure. Roots are fairly numerous and uniformly distributed. This horizon grades into the one below.
A_2	4-13	Yellow (10YR 7/6) with a few medium and small spots of reddish-yellow (5YR 6/8) when moist, very pale brown (10YR 8/4) when dry, nearly loose structureless fine sandy loam. Reddish-yellow spots are more common in lower part of horizon than in upper part. Roots are less numerous than in layer above. A very thin transition layer is present between this horizon and the one below.
B_2	13-19	Red (2.5YR 5/8) finely mottled with brownish-yellow (10YR 6/6) when moist, red (2.5YR 5/8) when dry, heavy sandy clay loam or light sandy clay. Uncrushed surfaces are slightly darker than when crushed. Displaced pieces break down readily into weakly developed medium blocky aggregates. It is friable when moist, slightly to moderately plastic when wet, and hard when dry. Small holes less than 1 mm. in diameter are common and a few black spots less than 1 mm. in diameter are present. This horizon grades into the one below.
B_{31}	19-26	Mottled red (2.5YR 4/8) and (2.5YR 5/8) when moist, reddish-yellow (5YR 6/8) finely mottled with white (5Y 8/2) when dry, essentially structureless sandy clay loam. Mottlings are of low contrast. Crushed surfaces are slightly lighter than uncrushed ones. The material is friable when moist and slightly plastic when wet. Small holes less than 1 mm. in diameter are common. This grades into the underlying horizon.
B_{32}	26-34	Massive sandy clay loam uniformly and coarsely mottled with red (2.5YR 4/8) and light gray (5Y 7/2) when moist; reddish-yellow (5YR 6/8) and white (5Y 8/2 to 8/1) when dry. Mottlings are of high contrast. The material is friable when moist, and slightly plastic when wet. Contains a few holes less than 1 mm. in diameter. This material grades into that below.
B_{33}	34-42	Essentially the same as overlying material in color, texture and consistence.
C	42-52	Yellowish-red (5YR 5/8) coarsely mottled with red (2.5YR 4/8 to 4/6) when moist, reddish-yellow (7.5YR 7/8) mottled with strong brown (7.5YR 5/6) when dry, sandy loam with small sandy clay loam pockets. Mottlings are of low contrast. This material is slightly compact in place but displaced pieces are very friable when moist; it is hard when dry. This grades into the material below.
C	52-70	Marbled reddish-yellow (7.5YR 6/8 and 5YR 6/8) and red (2.5YR 4/8) when moist; reddish-yellow (7.5YR 7/6) and yellowish-red (5YR 5/8) when dry, loamy sand or sand with lenses of sandy clay loam 6 to 20 mm. in thickness.

Sampled and described by: Alexander, Martin, Shearin, Simonson, and Templin; June, 1945.

PROFILE NO. 6

Ruston fine sandy loam, heavy subsoil phase, Henderson County, Texas.
Lab. Nos. 45610-617 (4544107-6-1 thru 8)--Average annual ppt. inches--35.53.

Depth inches	Size classes %								
	Clay	III	USDA silt	VFS	FS	MS	CS	VCS	Horizon
0- 4	4.0	5.3	15.6	26.3	43.1	9.6	0.9	0.5	Ap
4-13	4.9	6.3	17.0	24.2	43.6	8.8	0.9	0.6	A_2
13-19	31.3	2.9	6.4	11.7	41.5	8.4	0.5	0.2	B_2
19-26	24.6	3.0	5.6	10.5	47.6	11.0	0.6	0.1	B_{31}
26-34	28.1	6.3	11.7	14.0	36.4	9.2	0.6	0.0	B_{32}
34-42	25.9	5.3	9.1	10.0	43.4	10.1	1.0	0.5	B_{33}
42-52	18.2	1.9	2.4	3.1	63.1	12.7	0.5	0.0	C
52-70	17.9	1.3	1.4	3.5	62.4	14.5	0.3	0.0	C

Depth inches	M.E./100 g soil						% B. sat	pH	% O.C.	P ppm
	Ca	Mg	K	Mn	H	S+				
0- 4	1.0	.4	.3	.01	1.2	2.9	59	6.1	.49	2.8
4-13	.7	.3	.3	T	.7	2.0	65	6.0	.20	2.8
13-19	1.0	1.6	.3	T+	7.6	10.5	28	4.5	.30	2.4
19-26	.6	1.2	.2	T	6.0	8.0	25	4.4		6.0
26-34	.5	1.4	.2	T	7.4	9.5	22	4.4		2.8
34-42	.4	.4	.3	T	6.7	7.8	16	4.4		2.4
42-52	.3	1.0	.2	T	4.4	5.9	25	4.5		6.0
52-70	.5	.7	.4	T	3.7	5.3	30	4.6		6.8

PROFILE NO. 7

Ruston fine sandy loam (S47 Ga 81-2)

Location: West edge of the town of Wadley, Jefferson County, Georgia; approximately 235 feet above sea level.

Vegetation: Weeds and grass with scattered loblolly pines.

Topography: Gently sloping with gradient less than 2 percent.

Drainage: Both surface and internal drainage good.

Horizon	Depth Inches	Description
A_1	0-2	Gray (5Y 5/1) (dry) fine sandy loam; essentially structureless; containing numerous grass roots. This layer rests abruptly upon
A_2	2-10	Light olive gray (5Y 6/2) (dry) slightly hard fine sandy loam essentially structureless but compact. Digs out into large massive chunks. Numerous worm casts of distinct reddish-yellow (5YR 6/8) (dry) color are noticeable throughout the horizon. Numerous roots scattered throughout.
B_1	10-15 1/2	Yellowish-red (5YR 5/8) (dry) firm sandy loam; hard when dry; digs out into coarse blocks, which when crushed breaks down into single-grain structure. Gray (5Y 5/1) (dry) worm casts are scattered throughout the horizon and numerous small roots are also found. The lower boundary is not well defined.
B_{21}	15 1/2 20	Yellowish-red (5YR 5/6) when moist, reddish-yellow (5YR 6/8) (dry) very firm sandy clay loam; hard when dry; very weakly developed medium to coarse blocky structure. A few gray (5Y 5/1) (moist) worm casts and numerous small rootlets and coarse sand grains noticeable throughout the layer.
B_{22}	20-34 1/2	Red (2.5YR 5/8) when moist, yellowish-red (5YR 5/6) (dry), very firm sandy clay loam, with very weakly developed medium to coarse blocky structure. A few roots scattered throughout the horizon. Hard when dry and very slightly plastic when wet.
B_3	34 1/2-44	Red (2.5YR 4/8) when moist, red (2.5YR 4/8) (dry), friable light sandy clay loam. This horizon digs out into large lumps which upon crushing breaks down into small granules. A few small roots were noted.
C	44-49	Red (10R 5/8) light sandy clay loam or heavy sandy loam mottled with yellow (10YR 7/6) and light gray (10YR 7/2) when moist. Massive in place but when crushed breaks down into fine granules. Very few roots in this horizon.
C	49-62	Red (10R 5/8) light sandy clay loam or heavy sandy loam conpicuously mottled with yellow (10YR 7/6) and light gray (10YR 7/2) when moist. Massive in place but when crushed breaks into fine granules. Very few roots noted in this horizon.

Sampled and described by: Dyal, Hasty, Humbert and Martin; July 10, 1947.

PROFILE NO. 7

Ruston fine sandy loam, Jefferson County, Georgia.
Lab. Nos. 47915-922 (S47 Ga 81-2-1 thru 8)--Average annual ppt. inches--44.27.

Depth inches	Size classes %								
	Clay	III	USDA silt	VFS	FS	MS	CS	VCS	Horizon
0- 2	5.2	7.8	13.5	13.1	38.2	14.6	13.2	2.2	A_1
2-10	5.8	8.1	13.1	11.8	37.7	15.0	13.6	3.0	A_2
10-15.5	21.5	8.1	12.1	9.0	30.4	12.4	11.9	2.7	B_1
15.5-20	27.5	7.8	11.4	8.4	27.1	11.0	11.2	3.4	B_{21}
20-34.5	32.2	4.3	9.5	7.7	25.8	10.7	10.8	3.3	B_{22}
34.5-44	35.1	4.3	7.6	7.3	24.6	9.9	11.3	4.2	B_3
44-49	36.8	3.8	7.0	7.6	25.0	9.8	10.1	3.7	C
49-62	36.7	3.8	6.9	7.2	24.7	10.3	10.6	3.6	C

Depth inches	M.E./100 g soil						% B. sat	pH	% O.C.	P ppm
	Ca	Mg	K	Mn	H	S+				
0- 2	2.9	.8	.1	.03	3.2	7.0	54	6.1		
2-10	1.1	.4	0	.03	3.2	4.7	30	5.6		
10-15.5	1.9	.5	0	.02	2.9	5.3	46	5.4		
15.5-20	2.1	.6	T	.01	3.4	6.1	44	5.5		
20-34.5	1.9	.6	.1	T	3.6	6.2	42	5.5		
34.5-44	.5	.1	.1	T	4.8	5.5	13	5.1		
44-49	.2	.2	.1	T	4.8	5.3	10	5.2		
49-62	.2	.2	.1	T	5.0	5.5	9	5.1		

Horizon	Depth inches	Exchange capacity m.e/100 g	Surface M^2/g			% Inner surface	Kaolin %	Quartz %	Gibbsite %
			Total	Exterior	Inner				
A_2	2-10						45		2
B_1	10-15.5	25	110	100	10	1	55	15	2
B_{21}	15.5-20	22					60		2
B_{22}	20-34.5	19	125	70	55	5	65		2
B_3	34.5-44	16					65		1
C	44-49	14					70		1
C	49-62	15					70		1

Results of X-ray diffraction patterns of oriented samples.
15 1/2-20 Kaolin with perhaps 14A non-expanding mineral.
20-34 1/2 Kaolin with 14A non-expanding mineral.
44-49 Kaolin with 14A non-expanding mineral.

PROFILE NO. 8

Cahaba fine sandy loam (4544175-1)

Location: Navarro County, Texas; about 6 miles east of Kerens on State Highway No. 31 in an idle field south of highway. This location is on a terrace about 1/2 miles west of the floodplain of the Trinity River. Probably 20 to 30 feet above that of the floodplain; this is the lowest terrace above overflow.

Vegetation: Moderately dense cover of partridge peas and volunteer oats with some Johnson grass, weeds, and persimmon sprouts. The probability is that no fertilizer has been applied recently if ever. Originally forested with hardwoods.

Topography: Nearly level surface of 1 or 2% gradient on a low, undissected, very gently undulating terrace of the Trinity River.

Horizon	Depth Inches	Description
A_p	0-7	Yellowish-brown (10YR 5.4) moist, very pale brown (10YR 7/3) dry, nearly loose light fine sandy loam with poorly developed fine granular structure. Small roots are fairly numerous. This horizon grades into the underlying one.
A_2	7-14	Dark yellowish-brown (10YR 4/4) moist, pale brown (10YR 6/3) dry, nearly loose light fine sandy loam. Structure is the same as in overlying horizon. A transition layer, 1-1-1/2" thick, is present between this horizon and the one below, consisting of a mixture of the two horizons.
B_{21}	14-25	Red (2.5YR 4/8) moist, (2.5YR 5/8) dry, heavy sandy clay loam or heavy clay loam. Uncrushed surfaces are slightly darker than when crushed. The material is friable when moist and displaced pieces break down readily into weakly developed medium blocky aggregates. A few black concretions 1 to 4 mm. in diameter, a few fine dead plant roots, and a few small holes less than 1 mm. in diameter are present. The material is moderately plastic when wet and hard when dry. This horizon grades into the one below.
B_{22}	25-38	Red (2.5YR 4/8) moist, yellowish-red (5YR 5/8) dry, heavy sandy clay loam or heavy clay loam. Uncrushed surfaces are slightly darker than when crushed. The material is friable when moist and breaks down into weakly developed medium and coarse blocky aggregates. It is moderately plastic when wet and hard when dry. Black concretions 1 to 4 mm. in diameter are more numerous than in the overlying horizon. A few fine dead plant roots are also present. This grades into the horizon below.
B_3	38-46	Red (2.5YR 5/8) finely mottled with reddish-yellow (7.5YR 6/8) moist, yellowish-red (5YR 5.7) dry, friable sandy clay loam with poorly developed medium blocky structure. Uncrushed surfaces are slightly darker than when crushed. The material is slightly plastic when wet and hard when dry. Pinholes are very common. This grades into the material below.
C	46-56	Massive sandy clay loam that is yellowish-brown (10YR 5/6) mottled with red (2.5YR 4/6) and (2.5YR 4/8) moist, and reddish-yellow (5YR 6/8) mottled with yellow and brown colors dry. It is friable when moist. Mottlings are fine and medium in size and of medium to low contrast. Small holes are also common in this layer. This material grades into that below.
D	56-62	Massive clay that is mottled light yellowish-brown (2.5Y 6/4), yellowish-red (5YR 5/8) and brownish-yellow (10YR 6/8) moist, and pale yellow (5Y 8/3) mottled with reddish-yellow (7.5YR 6/6) when dry. It is firm when moist, strongly plastic when wet, and very hard when dry. Mottlings are of medium to low contrast. Black concretions 3 to 5 mm. in diameter are common; some are cylindrical.

Sampled and described by: Alexander, Martin, Shearin, Simonson, and Templin; June, 1945.

Cahaba fine sandy loam, Navarro County, Texas.
Lab. Nos. 45603-609 (4544175-1-1 thru 7)--Average annual ppt. inches--35.43.

Depth inches	Size classes %								
	Clay	III	USDA silt	VFS	FS	MS	CS	VCS	Horizon
0- 7	4.4	6.3	21.4	33.9	35.8	3.8	0.5	0.2	Ap
7-14	5.7	8.0	23.5	32.2	35.0	3.2	0.4	0.0	A_2
14-25	25.9	7.9	21.1	24.7	25.6	2.3	0.3	0.1	B_{21}
25-38	28.2	8.0	20.5	26.1	23.7	1.3	0.1	0.1	B_{22}
38-46	26.7	6.5	28.0	27.0	17.5	0.7	0.1	0.0	B_3
46-56	23.1	6.9	18.9	24.4	32.8	0.7	0.1	0.0	C
56-62	37.1	19.7	46.6	7.9	8.1	0.3	0.0	0.0	D

Depth inches	M.E./100 g soil						% B. sat	pH	% O.C.	P ppm
	Ca	Mg	K	Mn	H	S+				
0- 7	2.0	.4	.2	.04	.5	3.1	84	7.2	.32	7.6
7-14	1.5	.4	.2	.01	.5	2.6	81	7.4	.11	1.2
14-25	5.4	.5	.4	T	3.1	9.4	67	6.3	.24	4.0
25-38	4.4	3.2	.3	T	5.1	13.0	61	5.0	.20	1.2
38-46	5.1	3.6	.3	T	4.4	13.4	67	5.0	.15	4.4
46-56	4.6	3.4	.3	T	3.8	12.1	69	5.0	.15	1.6
56-62	9.1	6.8	.5	.03	5.7	22.1	74	5.0	.16	1.2

Horizon	Depth inches	Exchange capacity m.e/100 g	Surface M^2/g			% Inner surface	Kaolin %	Quartz %	Gibbsite %
			Total	Exterior	Inner				
A_2	7-14	46	160	60	100	15	20		0
B_{22}	25-38	46	285	105	180	25	25	5	0
B_3	38-46	50	325	110	215	30	25		0
C	46-56	52	305	110	195	25	25		0
D	56-62	60	340	110	230	30	25	10	0

Results of X-ray diffraction patterns of oriented samples.
25-38 Kaolin, illite and mixed layer mineral.
46-56 Kaolin, illite and mixed layer mineral.
56-62 Kaolin, mixed layer mineral containing considerable layers expandable some illite.

PROFILE NO. 9

Cahaba fine sandy loam (4544129-1)

Location: Kaufman County, Texas; about 1.45 miles northeast of Trinity River bridge on State Highway No. 34, just west of highway in a cultivated field. This is in a stream terrace of the Trinity River; it borders the floodplain and is about 40 feet above it.

Vegetation: Field planted to maize; very poor stand where sample was taken. The area has been in cultivation for 50 years or so and has received no fertilizer recently. Parts of field are heavily infested with Johnson grass.

Topography: Nearly level area of about 1% gradient in the undissected part of gently undulating terrace.

Horizon	Depth Inches	Description
A_p	0-3 1/2	Yellowish-brown (10YR 5/4) when moist, pale brown (10YR 6/3) when dry, nearly loose, structureless light fine sandy loam. This grades into the horizon below.
A_2	3 1/2-9	Strong brown (7.5YR 5/6) when moist, pale brown (10YR 6/3) when dry, nearly loose light fine sandy loam. Slight variegation in color is noticeable when moist or dry. Transition layer 1-1-1/2" thick between this horizon and the one below consists of very friable fine sandy loam or loam. It is essentially an interfingering of the two horizons.
B_{21}	9-20	Red (2.5YR 4/8) when moist, yellowish-red (5YR 4/6) when dry, light sandy clay loam which is very friable when moist. Natural breakage surfaces are slightly darker than crushed ones. Displaced pieces break down readily into poorly developed fine and medium blocky aggregates; these in turn are easily crushed into weakly developed fine and medium granules. A few small holes about 1/2 mm. in diameter are present. This layer grades into the underlying one.
B_{22}	20-27	Yellowish-red (5YR 5/8) when moist, (5YR 5/6) when dry, light sandy clay loam with poorly developed fine and medium blocky structure. It is very friable when moist and slightly plastic when wet. Uncrushed surfaces are slightly darker than crushed. Small holes are about as numerous as in overlying horizon. This grades into the material below.
B_{31}	27-39	Yellowish-red (5YR 5/8) when moist, reddish-yellow (5YR 6/6 to 7.5 YR 6/6) when dry, very friable fine sandy loam or loam with slight indication of blocky structure. A few small holes are also present in this horizon. This grades into the material below.
B_{32}	39-53	Red (2.5YR 4/8) when moist, yellowish-red (5YR 5/6) when dry, sandy clay loam with poorly developed fine and medium blocky structure. It is friable when moist. The blocks crush down easily into fine and medium granules. Uncrushed surfaces are slightly darker than crushed. This grades into the underlying horizon.
C	53-64	Yellowish-red (5YR 4/8) when moist, (5YR 5/6) when dry, friable light sandy clay loam with poorly developed coarse blocky structure. Uncrushed surfaces are slightly darker than when crushed. This material grades into that below.
C	64-90	Yellowish-red (5YR 5/8) when moist, (5YR 5/6) when dry, essentially structureless, very friable sandy loam.

Sampled and described by: Alexander, Martin, Shearin, Simonson, and Templin; June, 1945.

PROFILE NO. 9

Cahaba fine sandy loam, Kaufman County, Texas.
Lab. Nos. 45579-586 (4544129-1-1 thru 8)--Average annual ppt. inches 41.20.

Depth inches	Size classes %								
	Clay	III	USDA silt	VFS	FS	MS	CS	VCS	Horizon
0-3.5	4.0	3.9	14.2	26.9	50.3	4.1	0.5	0.0	A_p
3.5-9	6.1	7.5	21.1	23.7	44.8	4.1	0.2	0.0	A_2
9-20	16.3	8.2	21.7	21.1	27.4	3.3	0.2	0.0	B_{21}
20-27	15.8	8.8	23.7	21.3	35.8	3.2	0.2	0.0	B_{22}
27-39	15.5	8.6	25.2	21.0	35.5	2.6	0.2	0.0	B_{31}
39-53	29.5	7.9	12.5	20.6	35.0	2.3	0.1	0.0	B_{32}
53-64	21.8	4.7	18.4	16.7	40.7	2.4	0.0	0.0	C
64-90	15.3	1.8	6.2	17.3	60.7	0.5	0.0	0.0	C

Depth inches	M.E./100 g soil						% B. sat	pH	% O.C.	P ppm
	Ca	Mg	K	Mn	H	S+				
0-3.5	1.2	.5	.1	.06	.4	2.3	83	7.0		10.0
3.5-9	1.2	.8	.2	.01	.7	2.9	76	7.0		2.8
9-20	3.8	1.4	.3	T	1.7	7.2	76	6.4		6.4
20-27	2.9	1.7	.2	T	2.4	7.2	67	5.7		0.4
27-39	2.0	1.7	.2	.01	3.2	7.1	55	5.2		4.4
39-53	3.6	3.7	.4	T	5.4	13.1	59	5.0		0.8
53-64	2.9	3.4	.4	T	3.5	10.2	66	4.9		2.4
64-90	2.6	3.1	.3	.01	1.5	7.5	80	5.5		2.8

PROFILE NO. 10

Cahaba fine sandy loam (45 La 07-2)

Location: Bienville Parish, Louisiana, 6.2 miles southwest of Jonesboro along Highway No. 13, on low terrace of Dugdemona River, probably 20 to 30 feet above flood plain.

Topography: Nearly level to gently undulating, except on the margins of the terrace. Sample collected on nearly level site.

Vegetation: Good stand of medium-sized shortleaf and loblolly pine with a scattering of red gum. Undergrowth principally sassafras, gall berry, briars, vines, and tall grasses.

Horizon	Depth Inches	Description
A_1	0-2	Nearly loose, very dark grayish-brown (10YR 3/2) light fine sandy loam with weakly developed, fine granular structure. The soil is pale brown (10YR 6/3) when dry. Roots fairly numerous but soil is not matted. Small charcoal specks very numerous. Diffuse lower boundary.
A_2	2-6	Brown to dark brown (10YR 4/3), brown (10YR 5/3) dry, nearly loose, light fine sandy loam with poorly developed fine and medium granular structure. Some variegation in color of lighter colored material when moist. Small charcoal specks very numerous; few fine roots. Diffuse boundaries.
A_3	6-12	Dark yellowish-brown (5YR 4/4), brown (7.5YR 5/4) to strong brown (7.5YR 5/6) dry, nearly loose, fine sandy loam with some variegation of lighter and darker colors. Structure same as above. Small charcoal specks numerous; few pinholes present.
B_{21}	12-20	Yellowish-red (5YR 4/6) reddish-yellow (5YR 6/6) dry, friable, light sandy clay loam, essentially structureless, some variegation of darker and lighter colors. Gray coatings are present along some worm holes and root casts. Pinholes are numerous. Few charcoal specks are present. Slightly plastic when wet.
B_{22}	20-30	Yellowish-red (7.5YR 5/8), reddish-yellow (7.5YR 6/6 to 6/8) dry, friable, heavy fine sandy loam or loam, essentially structureless. Gray coatings common along worm and root holes as above. Pinholes common but less numerous than above.
B_3	30-42	Strong brown (7.5YR 5/8), reddish-yellow (7.5YR 6/6) dry, with some grayish yellow streaks and spots and white coatings are present along some root and worm holes. Very friable fine sandy loam.
C	42-53	Brownish-yellow (10YR 6/8) very friable fine sandy loam with spots and streaks of yellowish-red sand. When dry the soil is yellow (10YR 7/8). Gray coatings are present along some worm and root holes. Pinholes fairly numerous.

Sampled by: Alexander, Martin, Shearin, and Templin.

Described by: Shearin (Moist colors identified by Martin and Templin).

Date: November 3, 1945.

Cahaba fine sandy loam, Bienville Parish, Louisiana.
Lab. Nos. 46690-696 (45La07-2-1 thru 7)--Average annual ppt. inches 49.86.

Depth inches	Size classes %								
	Clay	III	USDA silt	VFS	FS	MS	CS	VCS	Horizon
0- 2	6.6	11.4	30.4	35.5	25.1	1.1	1.0	0.3	A_1
2- 6	5.8	11.6	29.8	38.7	25.2	0.3	0.2	0.0	A_2
6-12	9.2	16.3	33.4	34.4	22.5	0.3	0.2	0	A_3
12-20	13.8	16.9	32.6	31.9	21.4	0.2	0.1	0	B_{21}
20-30	17.7	17.2	31.5	30.9	19.6	0.1	0.1	0.1	B_{22}
30-42	13.1	13.8	27.8	34.5	24.2	0.1	0.1	0.2	B_3
42-53	12.7	9.2	22.6	38.9	25.7	0.1	0	0	C

Depth inches	M.E./100 g soil						% B. sat	pH	% O.C.	P ppm
	Ca	Mg	K	Mn	H	S+				
0- 2	2.0	.5	.1	.18	1.7	4.5	62	5.8	2.51	18.8
2- 6	1.0	.4	.1	.15	.7	2.4	71	5.9	.77	11.2
6-12	.9	.4	.1	.10	2.3	3.8	39	5.7		18.8
12-20	1.8	.5	.1	.06	2.1	4.6	54	5.4		37.6
20-30	2.4	.6	.1	.03	2.6	5.7	54	5.2		43.2
30-42	2.1	.3	.1	.01	3.0	5.5	45	5.2		35.2
42-53	2.4	1.4	.2	.01	2.2	6.2	64	5.2		26.8

PROFILE NO. 11

Cahaba fine sandy loam (45 La 31-2)

Location: An old abandoned field or small cut-over area at east edge of low terrace, 10 to 20 feet above the flood plain of a stream, 3.2 miles east of Choudrant, north of U. S. Highway 80, Lincoln Parish, Louisiana.

Vegetation: There is a thick growth of young oak, sassafras, red gum, and weeds. The weeds include oxeye daises, goldenrod, beggarweeds, and broom sedge.

Topography: The terrace as a whole is gently undulating to undulating with some low spots in which there are imperfectly drained or poorly drained soils. The immediate site has a slope of about 1% to the southeast.

Horizon	Depth Inches	Description
A_p	0-6 1/2	Nearly loose, fine poorly granular fine sandy loam in which pinholes and wormholes are common. The horizon when moist is very dark grayish-brown (10YR 3/2) in the upper part and dark brown to brown (10YR 4/3) in the lower part. When dry the soil is light brownish-gray (10YR 6/2).
A_2	6 1/2-12 1/2	Very friable, fine poorly granular fine sandy loam in which pinholes and wormholes are common. A few cores of darker material extend down from the overlying horizon into this one. The moist soil is dark yellowish-brown (10YR 4/4) uncrushed and slightly lighter crushed. There is a gradation toward brown (7.5YR 4/4) in the deeper part of the horizon. When dry the soil is yellowish-brown (10YR 5/4).
A_3	12 1/2-16	Very friable, fine weakly granular fine sandy loam in which pinholes and wormholes are common. Small worm pellets of darker material are common throughout the entire layer. The moist soil is yellowish-red (5YR 5/6) uncrushed and slightly lighter crushed. When dry the soil is strong brown (7.5YR 5/6).
B_{21}	16-22	Friable, medium poorly blocky sandy clay loam in which pinholes and wormholes are common. The blocks crush readily to fine, poorly granular structure. The moist soil is yellowish-red (5YR 4/8) uncrushed and slightly lighter crushed. When dry the soil is yellowish-red (5YR 5/8).
B_{22}	22-34	Friable, medium moderately blocky sandy clay loam which is slightly heavier than the overlying horizon. There are a few pinholes and wormholes. Moist soil is red (2.5YR 4/8) whereas the dry soil is yellowish-red (5YR 5/8). The color does not change with crushing.
B_3	34-46	Friable, medium and fine blocky silty clay loam in which there are a few pinholes and wormholes. The soil is slightly plastic when wet. The moist uncrushed soil is uniformly mottled yellowish-red (5YR 5/6) and brownish-yellow (10YR 6/6). The pattern of mottling is of fine size; the mottles are numerous and of low contrast. Colors of the dry soil are pale yellow (2.5Y 7/4 and 2.5Y 8/3).
C	46-57	Friable sandy clay loam with poorly blocky structure in the upper part of the horizon and massive structure in the lower part. There are a few strata of sandy loam in the horizon. Pinholes are few. The moist uncrushed soil is uniformly mottled with pale yellow (2.5Y 7/4) olive brown (2.5Y 4/6) and pale yellow (5Y 7/4). The pattern of mottling is of medium size and contrast. Dry colors are comparable to those of the overlying horizon.

Sampled by: Alexander, Martin, Shearin, Simonson, Sturgis, and Templin.

Described by: Shearin and Simonson. June 22, 1945.

PROFILE NO. 11

Cahaba fine sandy loam, Lincoln-Parish, Louisiana.
Lab. Nos. 45635-641 (45 La 31-2-1 thru 7)--Average annual ppt. inches--49.54.

Depth inches	Size classes %								
	Clay	III	USDA silt	VFS	FS	MS	CS	VCS	Horizon
0- 6.5	7.7	18.6	38.4	26.4	25.8	1.0	0.4	0.3	Ap
6.5-12.5	10.5	17.7	37.4	27.2	23.9	0.6	0.3	0.1	A_2
12.5-16	13.4	17.6	37.3	26.2	22.3	0.5	0.2	0.1	A_3
16-22	23.1	18.2	36.2	23.5	16.7	0.3	0.1	0.1	B_{21}
22-34	30.1	18.7	39.6	21.9	8.2	0.2	0	0	B_{22}
34-46	32.9	36.9	45.1	14.6	7.1	0.3	0	0	B_3
46-57	21.0	12.1	17.9	17.6	41.9	1.5	0.1	0	C

Depth inches	M.E./100 g soil						% B. sat	pH	% O.C.	PP ppm
	Ca	Mg	K	Mn	H	S+				
0- 6.5	3.6	.9	.4	.06	1.9	6.9	72	6.3		1.0
6.5-12.5	.7	1.2	.4	.11	2.3	4.7	51	5.4		3.2
12.5-16	.4	1.1	.5	.13	4.6	6.7	32	4.8		6.8
16-22	.6	1.8	.5	.03	6.6	9.5	30	4.6		4.8
22-34	.9	2.0	.4	0	8.9	12.1	27	4.6		2.8
34-46	1.4	2.2	.4	0	10.0	13.9	28	4.6		4.4
46-57	.6	1.2	.2	0	6.6	8.7	24	4.6		2.4

Horizon	Depth inches	Exchange capacity m.e/100 g	Surface M^2/g			% Inner sur-face	Kaolin %	Quartz %	Gibbsite %
			Total	Exterior	Inner				
Ap	0-6.5	90	170	65	105	15	20		0
A_2	6.5-12.5	45	170	75	95	10	25		0
A_3 B	12.5-16	50	190	175	15	5	25	15	0
B_{21}	16-22	41	210	90	120	15	25		0

Results of X-ray diffraction patterns of oriented samples.
0-6 1/2 Kaolin, non-expanding 14A mineral.
6 1/2-12 1/2 Kaolin, non-expanding 14A mineral.
12 1/2-16 Kaolin, non-expanding 14A mineral.
16-22 Kaolin, non-expanding 14A mineral.

PROFILE NO. 12

Cahaba fine sandy loam (45 Miss 34-1)

Location: Jones County, Mississippi, about 1/4-mile west of Laurel on low terrace, 20 to 25 feet above flood plain of Tallahala Creek.

Topography: Gently to very gently undulating except on the margins of the terrace. Sample collected on area of less than 1 percent slope.

Vegetation: Used as pasture at present; has not been cultivated for several years at least. Broomsedge predominates with some carpet grass, Bermuda grass and lespedeza. Weeds are fairly numerous.

Horizon	Depth Inches	Description
A_p	0-8	Dark grayish-brown (10YR 4/2), brown (10YR 5/3) when dry, nearly loose fine sandy loam with weakly developed fine and medium granular structure. Upper 1-1/2 inches well matted with fine roots; less numerous in lower part. Charcoal specks, largely less than 2 mm. in diameter, fairly numerous.
A_2	8-14	Strong brown (7.5YR 4/8), with some variegation of lighter colors, nearly loose fine sandy loam, essentially structureless. When dry, the soil is dominantly strong brown (7.5YR 5/6). Few fine roots and specks of charcoal less than 4 mm. in diameter present. Diffuse lower boundary.
B_1	14-18	Strong brown (7.5YR 4/6), with some slightly lighter streaks and spots, nearly loose sandy loam; weakly developed fine and medium granular structure. A few charcoal specks and fine roots present. The soil is yellowish-red (5YR 5/6) when dry.
B_{21}	18-21	Yellowish-red (5YR 5/8), reddish-yellow (5YR 6/8) when dry, very friable, very light sandy clay loam essentially structureless. Diffuse upper and lower boundaries. The material is slightly plastic when wet. Pieces of charcoal numerous, few are as large as 10 mm. in diameter; also a few fine roots present.
B_{22}	21-27	Yellowish-red (5YR 4/8) and (5YR 5/8), when dry, friable light sandy clay loam; weakly developed fine and medium blocky structure; slightly plastic when wet and hard when dry. Pinholes less than 1 mm. in diameter fairly numerous; few coarse sand grains and small charcoal specks and very few fine roots present.
B_3	27-34	Essentially the same as overlying material.
C	34-41	Strong brown (7.5YR 5/8) moist, reddish-yellow (7.5YR 6/8) when dry, very friable sandy loam.
C	41-51	Strong brown (7.5YR 5/8) moist, reddish-yellow (7.5YR 6/8) when dry, nearly loose sandy loam. Lower content of clay in this than in overlying material.

Sampled by: Alexander, Martin, Shearin, Templin, and Vanderford; November 8, 1945.

Described by: Shearin (Moist colors identified by Martin and Templin).

Cahaba fine sandy loam, Jones County, Mississippi.
Lab. Nos. 46664-671 (45 Miss 34-1-1 thru 8)--Average annual ppt. inches--56.69.

Depth inches	Size classes %								
	Clay	III	USDA silt	VFS	FS	MS	CS	VCS	Horizon
0- 8	7.0	17.3	27.8	5.1	30.0	23.3	7.4	0.4	Ap
8-14	11.2	18.1	26.9	4.3	27.7	22.4	7.3	0.2	A_2
14-18	13.2	18.2	27.5	4.1	26.1	22.0	6.9	0.2	B_1
18-21	15.1	19.0	28.6	4.0	25.2	20.2	6.6	0.3	B_{21}
21-27	18.7	17.8	28.8	4.0	23.9	18.9	5.5	0.2	B_{22}
27-34	16.6	18.2	28.4	3.9	24.2	20.3	6.3	0.3	B_3
34-41	10.3	13.8	21.6	4.2	28.1	26.3	9.2	0.3	C
41-51	11.3	11.4	17.8	5.3	32.6	25.2	7.5	0.3	C

Depth inches	M.E./100 g soil						% B. sat	pH	% O.C.	P ppm
	Ca	Mg	K	Mn	H	S+				
0- 8	1.9	.6	.3	.08	3.6	6.5	45	5.7	0.86	14.0
8-14	1.6	.6	.2	.05	2.4	4.9	51	5.8	0.29	2.8
14-18	2.1	.6	.2	.05	2.2	5.2	58	5.7	0.21	1.6
18-21	2.0	.7	.2	.04	2.2	5.1	57	5.6	0.19	4.4
21-27	2.4	1.0	.2	.02	2.1	5.7	63	5.5		3.2
27-34	2.1	1.5	.2	T	2.0	5.8	66	5.5		2.0
34-41	1.0	1.1	.2	.01	1.3	3.6	64	5.4		4.0
41-51	.6	.9	.1	.01	2.0	3.6	45	5.0		4.0

PROFILE NO. 13

Cahaba fine sandy loam (45 Miss 12-1)

Location: Clarke County, Mississippi, 4 miles north of Archussa Creek bridge, on Highway 45, north of Quitman, on low terrace about 30 feet above flood plain.

Topography: Nearly level to very gently undulating, except on the margins. Sample collected on nearly level site.

Vegetation: Cultivated field, in corn in 1945.

Horizon	Depth Inches	Description
Ap	0-6	Brown to dark brown (10YR 4/3), fine sandy loam. This is the plow layer. Some light grayish coatings and streaks in the lower part. The soil is light yellowish-brown (10YR 6/4) when dry.
A_2	6-12	Yellowish-red (5YR 4/6), with some variegation of darker and lighter colors, very friable sandy loam, essentially structureless. When dry, the material is largely yellowish-red (5YR 5/8). Small black spots and streaks, probably manganese, fairly numerous; a few worm holes about 2 mm. in diameter and a few fine pinholes are present.
B_1	12-15	Yellowish-red (5YR 4/6) very friable heavy sandy loam, yellowish-red (5YR 5/8) dry. A few light streaks or coatings and also some darker spots due probably to organic stains. Small black spots and streaks as in layer above; also a few pinholes mostly less than 1 mm. in diameter.
B_{21}	15-20	Yellowish-red (5YR 5/8), reddish-yellow (5YR 6/8) when dry, friable, light sandy clay loam, essentially structureless. Displaced pieces break into irregular pieces that break down very easily. The material is slightly plastic when wet. Numerous pinholes, few worm casts 2 to 3 mm. in diameter, and a few black specks are present.
B_{22}	20-26	Very friable, light sandy clay loam, similar in color to the overlying material. Pinholes numerous.
B_3	26-36	Yellowish-red (5YR 5/8), reddish-yellow (5YR 6/8) dry, very friable heavy sandy loam. A few pinholes present.
C	36-65	Red (2.5YR 5/8) Very friable heavy sandy loam, light red (2.5YR 6/8) dry. B and C horizons grade into each other.

Sampled by: Alexander, Martin, Shearin, and Templin; November 10, 1945.

Described by: Shearin (Moist colors identified by Martin and Templin).

PROFILE NO. 13

Cahaba fine sandy loam, Clarke County, Mississippi.
Lab. Nos. 46640-646 (45 Miss 12-1 thru 7)—Average annual ppt. inches—57.44.

Depth inches	Size classes %								
	Clay	III	USDA silt	VFS	FS	MS	CS	VCS	Horizon
0- 6	4.5	10.9	21.4	13.0	46.3	10.2	4.2	0.4	Ap
6-12	13.7	17.8	27.2	9.4	37.4	8.7	3.4	0.2	A_2
12-15	15.3	18.0	27.5	10.1	36.1	7.9	2.9	0.2	B_1
15-20	16.9	17.7	27.5	9.6	35.3	9.5	1.1	0.1	B_{21}
20-26	17.9	18.6	28.8	9.0	33.5	7.7	2.9	0.2	B_{22}
26-36	16.3	17.9	27.9	10.0	35.8	7.1	2.8	0.1	B_3
36-65	16.9	11.4	18.2	11.5	41.7	8.1	3.2	0.4	C

Depth inches	M.E./100 g soil						% B. sat	pH	% O.C.	P ppm
	Ca	Mg	K	Mn	H	S+				
0- 6	1.1	.4	.3	.06	1.9	3.8	50	6.0	.56	11.2
6-12	1.3	.3	.3	.11	3.0	5.0	40	5.3	.20	2.8
12-15	1.8	.4	.3	.07	3.0	5.6	46	5.2	.18	2.8
15-20	2.1	.6	.2	.05	3.0	6.0	50	5.2		.8
20-26	1.9	1.0	.2	.02	3.3	6.4	48	5.1		.8
26-36	1.4	1.1	.2	T	3.2	5.9	46	5.1		5.6
36-65	.5	.7	.2	.01	4.2	5.6	25	4.8		6.0

Horizon	Depth inches	Exchange capacity m.e/100 g	Surface M^2/g			% Inner surface	Kaolin %	Quartz %	Gibbsite %
			Total	Exterior	Inner				
A_2	6-12	36	160	50	110	15	15		1
B_{21}	15-20	35	165	70	95	15	35	30	1
B_{22}	20-26	36	240	85	155	20	30		1
C	36-65	33	210	240	0	0	35	5	1

Results of X-ray diffractions patterns of oriented samples.
15-20 Kaolin, non-expanding 14A mineral.

PROFILE NO. 14

Cahaba sandy loam (45 Ala 03-1)

Location: Barbour County, Alabama, 7.2 miles south of Eufaula, 6.2 miles on Highway No. 24 and 1 mile on graded road. The site is on a fairly high terrace of the Chattahoochee River (approximately 80 feet above floodplain).

Topography: Nearly level to gently undulating except on the margins. Sample collected on nearly level area.

Vegetation: Idle field at present; probably in peanuts in 1944. Weeds and grasses include beggarweed, dog fennel, Florida pursley, Bermuda grass and crabgrass.

Horizon	Depth Inches	Description
Ap	0-7	Brown to dark brown (7.5YR 4/3), brown (7.5YR 5/4) dry, nearly loose sandy loam with weakly developed fine granular structure. Upper part well matted with small roots which are also numerous in lower part. Contains small rolls of light sandy clay loam turned up from horizon below in plowing. Lower boundary wavy.
A_2	7-12	Brown to dark brown (7.5YR 4/4) very friable to nearly loose sandy loam. Displaced pieces are irregular and easily crush down into weakly developed fine granular structure. When dry the soil is strong brown (7.5YR 4/6). Fine pinholes numerous, coarse sand grains noticeable, fine roots fairly numerous, and black specks are fairly numerous.
B_1	12-20	Yellowish-red (5YR 4/8), (5YR 5/8) dry, very friable heavy sandy loam or light sandy clay loam; weakly developed fine granular structure; slightly to moderately plastic when wet. Fine roots fairly numerous, fine pinholes numerous. A few large charcoal pieces, small dark specks and a few dark streaks along old root channels are present. Coarse sand grains very noticeable.
B_2	20-34	Red (2.5YR 4/8), (2.5YR 5/8) dry, friable sandy clay loam with little structure. Uncrushed surfaces slightly darker than crushed. Roots less numerous than above; a few black specks and a few black streaks along root channels are present, as are a few small iron concretions; loose sand grains prominent.
B_3	34-47	Essentially same as overlying material, except probably lighter in texture.
C	47-59	Red (2.5YR 5/8), light red (2.5YR 6/8) dry, friable light sandy clay loam, essentially structureless. Dark specks are numerous as are coarse sand grains.
C	59-68	Light red (2.5YR 6/8), reddish-yellow (5YR 6/8) dry, very friable heavy sandy loam. B and C horizons grade into each other.

Sampled by: Alexander, Brackeen, Martin, Shearin, and Templin; November 14, 1945.

Described by: Shearin (Moist colors identified by Martin and Templin).

PROFILE NO. 14

Cahaba sandy loam, Barbour County, Alabama.
Lab. Nos. 46359-365 (45Ala 03-1-1 thru 7)--Average annual ppt. inches 57.18.

Depth inches	Size classes %								
	Clay	III	USDA silt	VFS	FS	MS	CS	VCS	Horizon
0- 7----------------------	5.6	5.5	21.6	0.8	23.4	17.1	23.9	7.6	Ap
7-12----------------------	15.7	8.6	22.0	0.6	17.9	14.0	22.3	7.5	A_2
12-20---------------------	18.5	8.4	13.0	7.8	16.8	12.6	22.5	8.8	B_1
20-34---------------------	23.3	9.0	12.1	7.3	16.9	11.6	19.5	9.3	B_2
34-47---------------------	26.9	6.1	8.7	7.6	16.5	12.1	20.3	7.9	B_3
47-59---------------------	26.7	6.2	9.1	8.4	17.4	13.0	18.7	6.7	C
59-68---------------------	25.9	5.5	8.2	8.7	16.8	12.3	19.0	9.1	C

Depth inches	M.E./100 g soil						% B. sat	pH	% O.C.	P ppm
	Ca	Mg	K	Mn	H	S+				
0- 7--------------	.7	.2	0	.06	1.0	2.0	50	5.9	.45	11.6
7-12--------------	.9	.2	0	.08	2.4	3.6	33	5.2	.35	5.6
12-20-------------	1.2	.3	0	.06	2.1	3.7	43	5.3	.22	2.8
20-34-------------	.9	.2	.1	.02	2.1	3.3	26	5.4		2.8
34-47-------------	1.8	.6	.1	0	2.8	5.3	47	5.3		2.4
47-59-------------	1.4	.6	.2	0	2.4	4.6	48	5.4		4.4
59-68-------------	1.4	.7	0	T	2.4	4.5	47	5.4		5.2

Horizon	Depth inches	Exchange capacity m.e/100 g	Surface M^2/g			% Inner surface	Kaolin %	Quartz %	Gibbsite %
			Total	Exterior	Inner				
A_2---------------	7-12	23	150	110	40	5	40		5
B_2---------------	20-34	14	150	110	40	5	30		5
C---------------	47-59	17	145	100	45	5	35	5	10

Results of X-ray diffraction patterns of oriented samples.
7-12 Kaolin, non-expanding 14A mineral.
20-34 Kaolin, non-expanding 14A mineral.
47-59 Kaolin, non-expanding 14A mineral.

PROFILE NO. 15

Cahaba fine sandy loam (45 Ala 35-1)

Location: Houston County, Alabama, 7/10-mile west of Columbia, and about 3/10-mile north of Highway 52, on graded road. On low terrace of Abbey Creek.

Topography: Nearly level to undulating; sample collected on nearly level position with less than 1 percent slope to the east.

Vegetation: Old pecan orchard; trees probably 25 to 30 years old. Trees have not been fertilized according to a local resident. Think sod is Bermuda grass; broomsedge, and weeds.

Horizon	Depth Inches	Description
Ap	0-5	Brown to dark brown (7.5YR 4/4), yellowish-brown (10YR 5/4) dry, nearly loose fine sandy loam, essentially structureless. The soil is well matted with roots. Lower boundary wavy and somewhat diffuse.
A_3 & B_1	5-10	Dark yellowish-brown (5YR 4/6), yellowish-brown (5YR 5/6) dry, very friable sandy loam in upper part and light sandy clay loam in lower part. This is a transition layer consisting of an interfingering of the layers above and below it. Dark specks and streaks along old root channels fairly numerous; few pinholes.
B_{21}	10-20	Red (2.5YR 4/6), (2.5YR 5/6) dry, friable to firm heavy sandy clay loam to sandy clay. Uncrushed surfaces slightly darker than crushed. Displaced pieces break into irregular fragments and these in turn break down into moderately developed fine and medium blocky structure. It is moderately plastic when wet. Fine pinholes fairly numerous. A few dark specks, and also dark streaks along old root channels and a few fine pecan tree roots are present.
B_{22}	20-25	Yellowish-red (5YR 5/6), red (2.5YR 5/6) dry, friable heavy sandy clay loam; moderately developed fine and medium blocky structure; slightly to moderately plastic when wet. A few roots, black specks, and black streaks along old root channels present; fine pinholes fairly numerous. Uncrushed surfaces are slightly darker than crushed.
B_{31}	25-30	Friable light sandy clay loam of yellowish-red (5YR 5/8) color, red (2.5YR 5/8) when dry. Displaced pieces crush easily into weakly developed fine blocky structure; slightly plastic when wet. Uncrushed surfaces slightly darker than crushed. Pinholes numerous, few roots present.
B_{32}	30-37	Very friable heavy fine sandy loam of strong brown (7.5YR 5/8) color, reddish-yellow (5YR 6/8) when dry. Very slightly plastic. Few pecan tree roots.
C	37-50	Reddish-yellow (7.5YR 6/8), reddish-yellow (7.5YR 6/8 to 7/8) when dry, very friable sandy loam.
D	50-60	Yellow (10YR 8/6), with some variegation of darker and lighter colors, coarse sand. It is dominantly yellow (2.5Y 8/6) when dry. In most cases the horizons grade into each other.

Sampled by: Alexander, Brackeen, Martin, Shearin, and Templin; November 13, 1945

Described by: Shearin (Moist colors identified by Martin and Templin).

PROFILE NO. 15

Cahaba fine sandy loam, Houston County, Alabama.
Lab. Nos. 46389-396 (45Ala 35-1-1 thru 8)--Average annual ppt. inches 53.72.

Depth inches	Size classes %								
	Clay	III	USDA silt	VFS	FS	MS	CS	VCS	Horizon
0- 5	8.0	5.0	11.5	21.4	34.6	11.8	9.9	2.8	Ap
5-10	21.3	8.1	15.9	25.2	25.8	6.6	4.1	1.1	A_3 & B_1
10-20	38.1	7.5	14.7	20.9	20.1	4.0	1.8	0.4	B_{21}
20-25	33.9	8.3	15.3	17.5	25.2	6.2	1.7	0.2	B_{22}
25-30	28.4	6.7	12.2	16.5	32.9	7.9	2.0	0.1	B_{31}
30-37	22.9	6.3	9.7	16.6	39.2	9.3	2.2	0.1	B_{32}
37-50	13.1	3.3	4.7	12.5	38.9	16.6	10.8	3.4	D
50-60	2.2	0.9	0.1	1.5	13.7	26.0	33.4	23.1	D

Depth inches	M.E./100 g soil						% B. sat	pH	% O.C.	P ppm
	Ca	Mg	K	Mn	H	S+				
0- 5	.8	.2	T	.09	2.1	3.2	34	5.7	.54	3.0
5-10	1.4	.3	.1	.10	4.2	3.6	31	4.7	.24	1.2
10-20	1.8	.5	.1	T+	3.6	5.0	28	4.7	.24	4.8
20-25	1.3	.5	.1	T+	6.1	8.0	24	4.7	.19	7.2
25-30	.9	.4	.1	T	5.5	6.9	20	4.7	.14	8.0
30-37	.4	.4	.1	T	4.7	5.6	16	4.5		5.6
37-50	.1	.4	.1	T+	3.2	3.8	16	4.6		5.2
50-60	.1	.2	T	.01	.5	.8	37	5.2		2.8

Horizon	Depth inches	Exchange capacity m.e./100 g	Surface M^2/g			% Inner surface	Kaolin %	Quartz %	Gibbsite %
			Total	Exterior	Inner				
B_{21}	10-20	13	150	70	80	10	50		5
B_{31}	25-30	24	145	75	70	10	50	5	5

Results of X-ray diffraction patterns of oriented samples.
10-20 Much Kaolin, some non-expanding 14A mineral.
25-30 Much Kaolin, some non-expanding 14A mineral.

PROFILE NO. 16

Shubuta silt loam (S47 Miss 38-1)

Location: Three-fourths mile west of Ponta School, Lauderdale County, Mississippi.

Horizon	Depth Inches	Description
A_1	0-2	Reddish-yellow (7.5YR 6/6) platy to weak medium granular silt loam with thin covering of forest litter and decayed organic matter. Moderate numbers of fine roots.
A_2	2-7-1/2	Light yellowish-brown (10YR 6/4) silt loam finely splotched with reddish yellow (7.5YR 6/6). Structureless; contains some very fine sand.
B_1	7-1/2-11	Transitional horizon of yellowish-red (5YR 5/8) silty clay loam grading downward into silty clay. Weak, fine blocky structure.
B_{21}	11-21	Red (2.5YR 5/6) silty clay with slightly darker (2.5YR 4/6) coatings on structural units. Structure is moderate to strong medium blocky to weakly prismatic, particularly near top of layer. Friable when moist.
B_{22}	21-27	Yellowish-red (5YR 5/6) silty clay with low contrast mottles of reddish yellow (5YR 6/8). Moderate fine blocky structure with tendency toward fine platiness. Friable.
B_{23}	27-36	Intricately and finely mottled red (2.5YR 4/6), light yellowish-brown (2.5Y 6/4) and pale yellow (2.5Y 8/4) friable silty clay, strong fine blocky structure; pieces have weathered shale appearance (as thin small flakes) in places.
B_3	36-45	Somewhat similar to layer above but with larger proportions of lighter colors, including much pale olive (5Y 6/3-6/4). Moderate to strong coarse granular to fine blocky structure which breaks down into shale-like pieces. Very friable silty clay.
C	45-60	Predominantly light olive gray (5Y 6/2) with streaks, thin layers, and mottles of high contrast red (10R 4/8) friable silty clay to clay, the light olive gray being clay, the red being coarser textured. Strong coarse granular to very fine blocky structure, as in some weathered shales. Resemble Susquehanna substrata in color but less sticky.

Collected by: L. T. Alexander, I. L. Martin, J. W. Moon, and H. B. Vanderford; December 1947.

Described by: W. S. Ligon

PROFILE NO. 16

Shubuta silt loam, Lauderdale County, Mississippi.
Lab. Nos. 481-488 (S47 Miss 38-1-1 thru 8)

Depth inches	Organic matter %	Size classes %								
		Clay	III	USDA silt	VFS	FS	MS	CS	VCS	Horizon
0- 2----------	3.1	13.7	36.0	66.7	8.6	9.6	0.9	0.4	0.1	A_{001} A_0 A_1
2-7 1/2-------	1.0	12.5	28.5	58.5	11.8	14.5	1.2	0.7	0.8	A_2
7 1/2-11----------	0.5	28.0	30.6	56.4	7.5	7.0	0.6	0.3	0.2	B_1
11-21----------	0.7	37.8	29.2	51.1	5.8	4.1	0.4	0.5	0.3	B_{21}
21-27----------	0.4	35.4	27.0	48.6	8.7	5.0	0.5	0.8	1.0	B_{22}
27-36----------	0.2	44.8	19.5	37.9	9.5	5.7	0.5	0.8	0.8	B_{23}
36-45----------	0.1	50.0	17.1	30.9	12.4	5.5	0.4	0.4	0.4	B_3
45-60----------	0.2	57.2	17.0	25.3	13.2	1.8	0.5	1.1	0.9	C

Depth inches	M.E./100 g soil						S+	% B. sat	pH	P ppm
	Ca	Mg	Mn	K	Na	H				
0- 2----------	1.5	1.2	0.09	0.4	0.1	7.5	10.8	30	4.8	10
2-7 1/2-------	0.6	1.0	0.03	0.4	0.1	4.2	6.3	33	4.9	7
7 1/2-11----------	1.2	2.0	0.01	0.5	0.1	7.1	10.9	35	4.8	6
11-21----------	0.9	3.0	tr.	0.6	0.1	11.5	16.1	28	4.8	5
21-27----------	0.3	3.0	tr.	0.5	0.1	12.4	16.3	24	4.8	4
27-36----------	0.1	4.7	tr.	0.6	0.1	17.8	23.3	24	4.6	4
36-45----------	0.1	5.6	tr.	0.6	0.1	20.3	26.6	24	4.5	2
45-60----------	0.1	6.8	tr.	0.6	0.2	23.3	30.9	24	4.3	4

Depth inches	Total soil potassium %	Glauconite	Mica	Remarks
0- 2-----	0.94			
7 1/2-11-----		0	little	Mostly quartz; trace feldspar.
11-21-----	1.11			
36-45-----		leached, if any	1-3%	Mostly quartz, some feldspar, a few heavy minerals.
45-60-----	1.27			

PROFILE NO. 17

Shubuta very fine sandy loam (S 47Miss 38-2)

Location: One-half mile east of Ponta School, Lauderdale County, Mississippi.

Horizon	Depth Inches	Description
A_{00},A_0,A_1	0-4	Dark grayish-brown (10YR 3/2) soft, very friable, weak fine granular very fine sandy loam overlain by thin layer of forest litter and organic matter. Splotched with darker colored spots higher in organic matter. Contains many fine roots.
A_2	4-8	Slightly browner than reddish-yellow (7.5YR 6/6), very fine sandy loam mottled with slightly more reddish material. Structure difficult to observe because of wetness but probably weak medium to coarse granular. Contains a few fine roots.
B_1	8-10 1/2	Red (2.5YR 4/8) silty clay, moderate medium to fine blocky structure, somewhat sticky.
B_{21}	10 1/2-18	Red (2.5YR 4/8) moderate to strong medium blocky structure, plastic silty clay or clay. Tendency toward prismatic structure.
B_{22}	18-23	Similar to layer above but with few small mottles of yellow (10YR 7/6) and more friable until firmly pressed. Structural units smaller (coarse granular to fine blocky) and flaky as in shale weathered in place.
B_{31}	23-33	Predominantly red (2.5YR 5/8) silty clay with mottlings and streaks of light yellowish brown and yellow. Weak medium blocky structure which, under slight pressure, falls apart readily into coarse granular units with angular faces. Friable, slightly plastic under pressure.
B_{32}	33-45	Coarsely mottled, splotched, streaked pale yellow (2.5Y 7/4), red (10YR 4/8), and intermediate shades. Friable silty clay loam containing some mica; weak coarse blocky structure; slightly plastic.
C	45-60	Similar to overlying horizon but with larger proportions of pale yellow and other light colors and more coarsely mottled. Soft, friable fine sandy clay which seems to be micaceous and contains occasional coarse iron concretions. Massive.

Collected by: L. T. Alexander, I. L. Martin, M. Lawson, and J. K. Ableiter; December, 1947.

Described by: W. S. Ligon

PROFILE NO. 17

Shubuta very fine sandy loam, Lauderdale County, Mississippi
Lab. Nos. 489-96 (S47 Miss 38-2-1 thru 8)

Depth inches	Organic matter %	Size classes %								
		Clay	III	USDA silt	VFS	FS	MS	CS	VCS	Horizon
0- 4	1.6	10.7	17.7	33.4	17.3	35.9	1.1	0.7	0.9	A_{00}, A_0, A_1
4- 8	0.5	10.8	17.7	32.9	17.8	35.4	0.9	0.6	1.6	A_2
8-10 1/2	0.7	37.0	14.3	24.6	12.2	24.2	0.8	0.5	0.7	B_1
10 1/2-18	0.5	68.3	9.5	13.9	7.0	10.3	0.2	0.2	0.1	B_{21}
18-23	0.4	68.1	9.9	14.3	7.6	9.6	0.3	0.1	0.0	B_{22}
23-33	0.3	62.2	12.5	18.4	8.4	10.2	0.6	0.2	0.0	B_{31}
33-45	0.2	48.3	15.2	19.3	10.4	20.0	1.7	0.3	0.0	B_{32}
45-60	0.1	43.6	12.5	15.6	8.1	30.0	1.4	1.2	0.1	C

Depth inches	M.E./100 g soil							% Base sat	pH	P ppm
	Ca	Mg	Mn	K	Na	H	S+			
0- 4	4.6	1.0	0.08	0.4	0.1	3.1	9.3	67	6.3	8
4- 8	1.8	0.8	0.07	0.3	0.1	2.1	5.2	60	6.1	7
8-10 1/2	3.7	4.0	0.03	0.5	0.1	5.4	13.7	60	5.4	3
10 1/2-18	3.0	6.2	0.01	0.8	0.1	14.2	24.3	42	4.6	6
18-23	1.7	5.3	tr.	0.7	0.1	17.8	25.6	30	4.7	4
23-33	0.8	4.3	tr.	0.5	0.1	19.3	25.0	23	4.6	1
33-45	0.3	3.3	tr.	0.3	0.1	17.0	21.0	19	4.6	3
45-60	$<$ 0.1	4.4	0.01	0.5	0.1	15.9	20.9	24	4.6	3

Depth inches	Total soil potassium %	Glauconite	Mica	Remarks
0- 4	0.65			
8-10 1/2		0	low	Mostly quartz, some weathered feldspars, trace heavy minerals
18-23	0.70			
33-45		10-15% grains might be leached glauconite	low	Mostly quartz, some weathered feldspars, trace heavy minerals
45-60	0.76			

PROFILE NO. 18

Shubuta fine sandy loam (S47Miss 38-3)

Location: One-half mile west of Ponta School, Lauderdale County, Mississippi

Horizon	Depth Inches	Description
A_p	0-6	Grayish-brown (10YR 5/2) fine sandy loam, either structureless or with very weak fine granular structure. Few fine roots present.
B_1	6-9	Yellowish-red (5YR 4/6) silty clay loam with very weak fine blocky structure; some mingling of yellowish-red and lighter brownish colors.
B_{21}	9-20	Red (2.5YR 4/6) silty clay with moderate to strong, fine to medium blocky structure; firm, friable, slightly sticky. Very weak prismatic structure in place.
B_{22}	20-31	Intricately mottled red (2.5YR 4/6) and pale brown (10YR 6/3) silty clay with moderate medium to coarse blocky structure. Structural units consist of small shale-like flakes which crush easily when wet. Medium to coarse granular structure. Firm, friable, slightly sticky.
C_{11}	31-45	Thinly bedded clay shale consisting of laminae of pale yellow (5Y 7/3) to pale olive (5Y 6/3) silty clay to clay and thin laminae of red (2.5YR 4/6) silty clay.
C_{12}	45-55	Similar to overlying horizon, but individual beds are thicker. This seems a weathered clay shale.
C	55-67	Thinly bedded weathered clay shale consisting mainly of pale olive (5Y 6/3) silty clay but with very fine laminae of yellow (10YR 7/8) to red (10R 4/6) silty clay. There are some mottles in the shale which is soft and crumbly.

Collected by: L. T. Alexander, Y. H. Havens, I. L. Martin, J. W. Moon and H. B. Vanderford; December 1947.

Described by: W. S. Ligon

PROFILE NO. 18

Shubuta fine sandy loam, Lauderdale County, Mississippi.
Lab. Nos. 4817-23 (S47 Miss 38-3-1 thru 7)

Depth inches	Organic matter %	Size classes %								
		Clay	III	USDA silt	VFS	FS	MS	CS	VCS	Horizon
0- 6------------	1.2	5.4	16.7	38.1	17.0	34.6	2.8	0.9	1.2	A_p
6- 9------------	0.8	21.4	24.3	44.1	1.2	25.2	7.1	0.5	0.5	B_1
9-20------------	0.6	60.2	18.7	29.7	5.7	3.1	0.4	0.5	0.5	B_{21}
20-31------------	0.1	53.8	22.3	36.4	8.0	1.0	0.3	0.4	0.1	B_{22}
31-45------------	0.0	46.5	27.2	43.3	8.8	0.5	0.1	0.4	0.4	C_{11}
45-55------------	0.0	40.6	27.6	46.8	11.0	0.6	0.2	0.3	0.5	C_{12}
55-67------------	0.2	43.0	28.6	47.4	6.6	0.5	0.3	1.3	0.9	C

Depth inches	M.E./100 g soil							% B. sat	pH	P ppm
	Ca	Mg	Mn	K	Na	H	S+			
0- 6------------	0.5	0.3	0.01	0.5	0.1	3.1	4.5	31	5.0	5
6- 9------------	1.3	1.6	tr.	0.4	0.1	8.2	11.6	29	4.7	3
9-20------------	1.7	5.7	tr.	0.7	0.1	23.5	31.7	26	4.4	4
20-31------------	0.5	6.0	tr.	0.8	0.1	24.5	31.9	23	4.4	1
31-45------------	<0.1	6.4	tr.	0.9	0.1	24.7	32.1	23	4.3	3
45-55------------	<0.1	6.4	tr.	0.7	0.1	23.5	30.7	23	4.3	4
55-67------------	<0.1	7.3	tr.	0.8	0.1	22.8	31.0	26	4.2	6

Depth inches	Total soil potassium %	Glauconite	Mich	Remarks
0- 6--------	0.53			
9-20--------		0	More than Lab. Nos. 4811 & 4815	Mostly quartz
20-31--------	1.04			
45-55--------		Leached, if any	More than Lab. Nos. 4811 & 4815	Mostly quartz
55-67--------	1.47			

PROFILE NO. 19

Shubuta fine sandy loam (S47Miss 38-4)

Location: Twelve miles north of Meridian and 200 yards west of Route 39, Lauderdale County, Mississippi.

Horizon	Depth Inches	Description
A_1	0-2 1/2	Grayish-brown (10YR 5/2) to brown (10YR 5/3) fine sandy loam with weak fine granular to platy structure. Many fine roots present. There is a thin leaf and broomsedge litter on the surface.
A_2	2 1/2-8	Structureless pale yellow (2.5Y 7/4) fine sandy loam grading toward light yellowish-brown (2.5Y 6/4) in the lower part of the horizon. This is slightly compact.
B_1	8-12	Reddish-yellow (5YR 5/8) silty clay loam with some low contrast mottlings of yellowish-brown; very weak medium subangular blocky structure; slightly compact.
B_{21}	12-20	Yellowish-red (5YR 5/8) very fine sandy clay loam to silty clay loam with moderate medium subangular blocky structure; a few root holes extending into horizon contain lighter brown soil material.
B_{22}	20-29	Coarsely mottled red (2.5YR 4/6), reddish yellow (7.5YR 6/6) and yellow heavy fine sandy loam to light fine sandy clay loam with moderate coarse blocky structure. This layer is slightly hard and seems to be a weak pan.
B_3	29-45	Coarsely mottled red (2.5YR 4/8), pale olive (5Y 6/3) and intermediate colors, this layer consists of irregularly alternating layers of olive fine sandy clay and red fine sandy clay loam with strong coarse blocky structure. Material is slightly hard in place but friable when removed and crushed.
C	45-60	Similar to the layer above except that laminations are coarser and include a higher proportion of olive fine sandy clay. The reddish fine sandy clay loam layers resemble weathered and crumbly shale.

Collected by: L. T. Alexander, M. Lawson, I. L. Martin, C. D. Melton, and H. B. Vanderford; December, 1947.

Described by: W. S. Ligon

PROFILE NO. 19

Shubuta fine sandy loam, Lauderdale County, Mississippi.
Lab. Nos. 4824-30 (S47 Miss 38-4-1 thru 7)

Depth inches	Organic matter %	Size classes %								
		Clay	III	USDA silt	VFS	FS	MS	CS	VCS	Horizon
0-2 1/2	1.2	5.1	19.5	40.9	21.9	30.4	1.2	0.3	0.2	A_1
2 1/2-8	0.3	5.6	23.6	44.7	19.5	28.8	1.1	0.2	0.1	A_2
8-12	0.4	22.8	25.0	43.8	12.9	19.4	0.8	0.2	0.1	B_1
12-20	0.2	33.6	22.8	37.6	10.9	17.0	0.7	0.2	0.0	B_{21}
20-29	0.1	22.9	19.7	34.4	16.3	24.7	1.1	0.3	0.3	B_{22}
29-45	0.0	32.3	17.2	28.2	16.6	21.6	0.8	0.2	0.3	B_3
45-60	0.0	44.2	13.4	20.1	18.0	16.4	0.5	0.4	0.4	C

Depth inches	M.E./100 g soil							% Base sat.	pH	P ppm
	Ca	Mg	Mn	K	Na	H	S+			
0-2 1/2	0.9	0.4	0.02	0.2	0.1	3.3	4.9	33	5.4	7
2 1/2-8	0.4	0.2	tr.	0.2	0.0	1.9	2.7	30	5.8	2
8-12	1.8	2.0	tr.	0.3	0.1	4.6	8.8	48	5.2	1
12-20	1.8	2.9	tr.	0.4	0.1	7.8	13.0	40	5.1	1
20-29	0.2	1.6	tr.	0.3	0.1	7.3	9.5	23	4.9	1
29-45	0.1	3.0	tr.	0.2	0.1	11.1	14.5	23	4.8	1
45-60	0.1	5.0	tr.	0.8	0.1	12.2	18.2	33	4.6	1

Depth inches	Total soil potassium %	Glauconite	Mica	Remarks
0-2 1/2	0.57			
8-12		A few leached grains	Little	Trace sponge spicules, quartz
12-20	0.68			
29-45		May be a few leached	Small amount	
45-60	0.78			

PROFILE NO. 20

Shubuta silt loam (S47Miss 38-5)

Location: Fourteen miles north of Meridian on Route 39, in a cut 1-1/2 miles south of Lizelia, Lauderdale County, Mississippi.

Horizon	Depth Inches	Description
A_1	0-2 1/2	Light brownish-gray (2.5Y 6/2) to grayish-brown (2.5Y 5/2) silt loam in which there are channels and faint small mottles of brown. Many fine roots present. The covering of leaf litter and brownish-black leaf mold on the surface is about 1 inch thick.
A_2	2 1/2-9	Pale yellow (2.5Y 7/4) silt loam which grades from being structureless to having very weak fine granular structure; smooth and friable; a few fine roots.
B_1	9-13	Yellowish-red (7.5YR 5/8) silty clay loam faintly and finely mottled with brownish yellow and reddish yellow; weak fine subangular blocky structure.
B_{21}	13-27	Red (2.5YR 4/8) silty clay which is firm and slightly plastic and has a moderate to strong medium subangular blocky structure tending slightly toward being weak medium prismatic in places.
B_{22}	27-39	Coarsely mottled red (2.5YR 5/6) and pale olive (5Y 6/3) silty clay which is plastic and slightly sticky; structure of weak coarse blocky aggregates which crush easily to fine blocky or coarse granular aggregates.
B_3	39-51	Silty clay loam which is intricately mottled with various shades of red, yellowish-brown, and olive gray. It grades from a weak medium to coarse blocky structure to being massive in place. Slightly compact units crush rather easily; crushed material seems more smooth and silty than that from immediate overlying horizon.
C	51-62	Coarsely mottled red (2.5YR 5/8) and pale yellow (5Y 8/4) fine sandy clay loam, mottles grading into each other through various shades of yellow and brown. The horizon is massive and seems slightly cemented. It contains occasional dark concretions. (Descriptions of this and the horizon above were prepared late in the day and there may be question about identification of the colors).

Collected by: J. K. Ableiter, L. T. Alexander, I. L. Martin, C. D. Melton, and H. B. Vanderford; December, 1947.

Described by: W. S. Ligon

Shubuta silt loam, Lauderdale County, Mississippi.
Lab. Nos. 4831-37 (S47 Miss 38-5-1 thru 7)

Depth inches	Organic matter %	Size classes %								
		Clay	III	USDA silt	VFS	FS	MS	CS	VCS	Horizon
0-2-1/2------------	3.1	8.3	34.9	64.4	14.1	12.1	0.7	0.3	0.1	A_1
2-1/2-9------------	1.0	9.0	38.3	64.1	13.6	12.4	0.7	0.2	0.0	A_2
9-13---------------	0.4	22.0	35.2	57.5	11.0	8.9	0.5	0.1	0.0	B_1
13-27--------------	0.2	36.8	26.6	45.1	11.3	6.6	0.2	0.0	0.0	B_{21}
27-39--------------	0.1	45.2	32.6	46.0	5.9	2.8	0.1	0.0	0.0	B_{22}
39-51--------------	0.1	33.4	23.8	40.4	13.1	12.8	0.2	0.1	0.0	B_3
51-62--------------	0.0	28.4	16.7	29.3	18.0	22.4	1.4	0.4	0.1	C

Depth inches	M.E./100 g soil							% Base sat	pH	P ppm
	Ca	mg	Mn	K	Na	H	S+			
0-2-1/2------------	0.1	0.7	0.04	0.2	0.1	8.8	9.9	12	4.3	4
2-1/2-9------------	0.6	0.6	0.03	0.3	0.1	4.0	5.6	28	4.9	3
9-13---------------	1.6	1.5	tr.	0.2	0.1	5.2	8.6	40	4.8	1
13-27--------------	3.6	4.3	tr.	0.3	0.1	8.6	16.9	49	4.8	1
27-39--------------	4.7	8.3	0.01	0.5	0.1	11.5	25.1	54	4.6	1
39-51--------------	4.1	8.0	0.01	0.4	0.1	8.8	21.4	59	4.7	1
51-62--------------	3.6	7.3	tr.	0.5	0.1	7.8	19.3	60	4.8	2

Depth inches	Total soil Potassium%	Glauconite	Mica	Remarks
0-2-1/2------	0.96	Essentially none	little	Mostly quartz, trace feldspar
2-1/2-9------				
13-27--------	1.06	1 to 2%	appreciable-mostly biotite	Mostly quartz, some feldspar
39-51--------				
51-62--------	1.21			

PROFILE NO. 21

Shubuta fine sandy loam (S47 Miss 59-6)

Location: East of Booneville on route 30, 10.8 miles from junction of Highways 30 and 45, Prentiss County, Mississippi.

Horizon	Depth Inches	Description
Ap	0-5	Grayish-brown (2.5Y 4/2) fine sandy loam with very weak crumb structure, matted with fine roots. Coarsely splotched with yellowish brown (10YR 5/4) and dark grayish brown (10YR 5/4) and dark grayish brown (10YR 3/2) indicating uneven distribution of organic matter.
A_2	5-7	Brownish-yellow (10YR 6/6) to yellowish-brown (10YR 5/4) fine sandy loam containing a few small roots; very weak coarse granular structure.
B_{21}	7-14	Yellowish-red (5YR 5/6) silty clay containing a small amount of fine sand; strong medium subangular blocky structure.
B_{22}	14-19	Yellowish-red (5YR 5/8) silty clay containing slightly more sand and a few mica flakes; scattered small yellow (10YR 7/8) mottles; strong medium subangular blocky structure.
B_{31}	19-31	Predominantly yellowish red (5YR 5/8) intricately mottled with pale yellow (2.5Y 8/4) and gray; strong medium blocky silty clay containing some fine sand and fine mica. Structural units hard. Proportions of pale yellow and gray mottles increase with depth and red decreases. At bottom, layer is highly mottled red, pale yellow, and gray.
B_{32}	31-37	Predominantly pale olive (5Y 6/4) silty clay, mottled with yellowish red (5YR 5/8) and containing small amount of fine sand and some fine mica. Strong medium blocky structure and structural units hard.
C	37-47	Predominantly pale olive (5Y 6/3) to light olive gray (5Y 6/2) strong coarse, blocky hard sandy clay; slightly prismatic; containing small to medium sized mottles and streaks of yellowish red (5YR 5/8) and fine mica flakes. Strongly influenced by "greensand" materials.
C	47-60	Same color as layer above but units less hard, slightly more friable, and crush to micaceous fine sandy clay. Largely "greensand" materials.

Collected by: L. T. Alexander, I. L. Martin and H. B. Vanderford, December, 1947.

Described by: W. S. Ligon

PROFILE NO. 21

Shubuta fine sandy loam, Prentiss County, Mississippi.
Lab. Nos. 4838-45 (S47 Miss 59-6-1 thru 8)

Depth inches	Organic matter %	Size classes %								
		Clay	III	USDA silt	VFS	FS	MS	CS	VCS	Horizon
0-5	2.9	11.4	6.3	22.4	53.9	11.6	0.3	0.3	0.1	Ap
5-7	1.0	20.4	5.6	25.3	44.0	10.1	0.1	0.1	0.0	A_2
7-14	0.4	49.8	5.3	14.9	31.5	3.6	0.1	0.1	0.0	B_{21}
14-19	0.3	44.4	6.7	19.0	33.0	3.4	0.1	0.1	0.0	B_{22}
19-31	0.2	37.4	7.4	21.1	37.5	3.8	0.1	0.1	0.0	B_{31}
31-37	0.6	34.3	7.0	18.7	40.4	6.4	0.1	0.1	0.0	B_{32}
37-47	0.2	31.6	6.8	18.9	42.6	6.7	0.1	0.1	0.0	C
47-60	0.1	32.3	6.4	15.6	43.5	8.3	0.2	0.1	0.0	C

Depth inches	M.E./100 g soil							% Base sat	pH	P ppm
	Ca	Mg	Mn	K	Nu	H	S+			
0-5	4.6	0.8	tr.	0.3	0.1	6.1	11.9	49	5.5	6
5-7	1.3	1.8	0.1	0.3	0.1	9.2	12.8	28	4.7	5
7-14	0.7	3.6	tr.	0.5	<0.1	21.2	26.0	18	4.9	4
14-19	0.6	3.4	tr.	0.3	<0.1	19.7	24.0	18	4.4	4
19-31	1.8	2.9	tr.	0.3	0.1	19.9	25.0	20	4.4	2
31-37	1.3	2.8	tr.	0.2	0.1	18.8	23.2	19	4.3	3
37-47	1.9	2.7	tr.	0.3	0.1	17.4	22.4	22	4.3	1
47-60	3.0	3.0	tr.	0.2	0.1	17.0	23.3	27	4.3	1

Depth inches	Total soil potassium %	Glauconite	Mica	Remarks
0-5	1.00			
14-19		3-7%	Common	Mostly quartz
19-31	1.10			
38-45		20%	Common	Mostly quartz
47-60	1.33			

PROFILE NO. 22

Shubuta fine sandy loam (S47 Miss 59-7)

Location: Eleven miles east of Booneville, approximately .6 mile south of Route 30 on a country road, Prentiss County, Mississippi.

Horizon	Depth Inches	Description
A_1	0-2	Grayish-brown (2.5Y 4/2) fine sandy loam with very weak fine crumb structure. Contains many small roots. Splotched and streaked with yellowish brown (10YR 5/4) and dark grayish brown (2.5Y 3/2) due to uneven distribution of organic matter.
A_2	2-5	Light yellowish-brown (10YR 6/4) very friable fine sandy loam with weak fine platy structure. Contains many small roots.
B_{21}	5-13	Yellowish-red (5YR 4/6) silty clay containing very small amount of fine sand. Friable when moist; probably hard when dry. Moderate fine to medium subangular blocky structure.
B_{22}	13-19 1/2	Predominantly yellowish-red (5YR 4/6) silty clay containing small amount of very fine sand and some flakes; mottled with pale yellow (5Y 6/3) to pale olive (5Y 7/3). Rather soft and friable when moist, probably hard when dry. Moderate medium blocky structure.
B_3	19 1/2-30	Intricately mottled yellowish-red (5YR 4/6), pale olive (5Y 6/3), and light olive gray (5Y 6/2) silty clay. Moderate fine to medium blocky structure; friable when moist; probably hard when dry. Contains considerable mica.
C	30-38	Dominantly olive gray (5Y 5/2) to olive (5Y 5/3) but intricately mottled with red (2.5YR 4/8), yellowish-red (5YR 4/6) and brownish yellow (10YR 6/6). Texture is silty clay loam; friable when moist; probably hard when dry. Micaceous, weathered "greensand".
C	38-45	Predominantly light olive gray (5Y 6/2) to pale olive (5Y 6/3) micaceous silty clay, mottled with red to brownish yellow as above, but mottlings much less numerous. Weak medium blocky structure when moist; probably hard and with strong medium blocky structure when dry.
C	45-58	Olive gray (5Y 6/2) micaceous, massive very fine sandy clay loam with yellowish brown (10YR 6/8) lateral streaks and fine mottles. Weathered "greensand".

Collected by: L. T. Alexander, I. L. Martin, H. B. Vanderford, and J. W. Moon; December, 1947.

Described by: W. S. Ligon

PROFILE NO. 22

Shubuta fine sandy loam, Prentiss County, Mississippi.
Lab. Nos. 4846-53 (S47 Miss 59-7-1 thru 8)

Depth inches	Organic matter %	Size classes %								
		Clay	III	USDA silt	VFS	FS	MS	CS	VCS	Horizon
0-2	2.6	6.9	11.1	29.3	51.5	11.6	0.4	0.3	0.0	A_1
2-5	1.4	13.1	13.9	30.6	45.7	10.2	0.2	0.2	0.0	A_2
5-13	0.2	42.3	6.9	14.0	35.2	8.4	0.0	0.1	0.0	B_{21}
13-1 1/2	0.0	37.7	6.5	15.3	38.2	8.6	0.1	0.1	0.0	B_{22}
19 1/2-30	0.0	33.4	6.0	15.4	39.0	11.9	0.1	0.2	0.0	B_3
30-38	0.0	31.3	5.4	14.5	40.4	13.6	0.1	0.1	0.0	C
38-45	0.0	30.6	5.3	13.5	41.6	14.1	0.1	0.1	0.0	C
45-58	0.0	24.1	2.9	9.5	49.6	16.2	0.2	0.3	0.1	C

Depth inches	M.E./100 g soil							% Base sat	pH	P ppm
	Ca	Mg	Mn	K	Na	H	S+			
0-2	2.3	0.7	0.04	0.3	0.1	3.8	7.2	47	5.3	6
2-5	1.3	0.7	0.01	0.3	0.1	5.7	8.1	30	4.6	4
5-13	2.8	2.6	tr.	0.3	0.1	16.6	22.4	26	4.7	2
13-19 1/2	2.5	2.6	tr.	0.5	0.1	18.2	23.9	24	4.6	10
19 1/2-30	2.4	2.4	tr.	0.5	0.1	19.5	24.9	22	4.4	10
30-38	2.6	2.3	tr.	0.4	0.1	19.7	24.1	22	4.3	8
38-45	3.3	2.4	tr.	0.5	0.1	18.6	24.9	25	4.0	12
45-58	4.1	2.4	tr.	0.5	0.1	15.3	22.4	32	4.0	6

Depth inches	Total soil potassium %	Glauconite	Mica	Remarks
0- 2	0.72			
5-13		1-2%	Appreciable biotite	Mostly quartz, some feldspars & heavy minerals
13-19 1/2	0.94			
38-45		10-15%	fairly abundant muscovite & biotite	Mostly quartz, some feldspars less heavy minerals
45-58	1.29			

PROFILE NO. 23

Shubuta fine sandy loam (S47 Miss 59-8)

Location: Eleven and one-half miles east of Booneville on country road approximately 1-1/2 miles south of Route 30, Prentiss County, Mississippi.

Horizon	Depth Inches	Description
A_1	0-1	Black fine sandy loam, color probably due to burning, overlain by light forest litter of leaves and twigs; weak fine crumb structure; many fine roots.
A_2	1-5	Brown (10YR 4/3) fine sandy loam with weak medium granular structure; some fine roots.
B_{21}	5-16	Red (2.5YR 3/6) silty clay with moderate medium subangular structure; plastic, friable; containing a few fine roots.
B_{22}	16-24	Predominantly red (2.5YR 3/6) fine sandy clay with a few mottles of pale olive (5Y 6/3) to light olive gray (5Y 6/2); friable; moderate medium subangular blocky structure; micaceous.
B_3	24-29	Highly and intricately mottled red (2.5YR 3/6), light olive gray (5Y 6/2) and yellowish red (5YR 5/8) micaceous fine sandy clay with moderate medium subangular blocky structure; the lighter colored portions are less weathered "greensand".
C_1	29-39	Similar to B_3, but with weaker structure, softer consistence, more mica, and a larger proportion of olive gray.
C	39-51	Highly and intricately mottled red, light olive gray, and yellowish red as in layer above; mottles are of high contrast; little structure; massive, soft, very friable fine sandy clay loam. Weathered "greensand" materials.
C	51-60	Soft, friable, massive micaceous sandy loam to light sandy clay loam, intricately streaked and mottled with many shades of gray, yellow, yellowish red, and red. Some fine reddish streaks are horizontal. The crushed and mixed material is brownish yellow (10YR 6/6) in color. Partially weathered "greensand".

Collected by: L. T. Alexander, I. L. Martin, H. B. Vanderford, and M. Lawson; December, 1947.

Described by: W. S. Ligon

Shubuta fine sandy loam, Prentiss County, Mississippi
Lab. Nos. 4854-61 (S47 Miss 59-8-1 thru 8)

Depth inches	Organic matter %	Size classes %								
		Clay	III	USDA silt	VFS	FS	MS	CS	VCS	Horizon
0- 1------------	8.7	8.6	10.0	24.8	40.5	23.0	1.2	1.4	0.5	A_1
1- 5------------	2.0	15.2	11.1	25.5	40.1	18.9	0.2	0.1	0.0	A_2
5-16------------	0.8	53.3	8.2	12.8	26.4	7.4	0.1	0.0	0.0	B_{21}
16-24------------	0.3	41.5	7.4	11.9	36.6	10.0	0.0	0.0	0.0	B_{22}
24-29------------	0.2	39.7	8.1	12.0	37.2	11.0	0.1	0.0	0.0	B_3
29-39------------	0.1	35.0	8.0	12.0	40.5	12.4	0.1	0.0	0.0	C_1
39-51------------	0.2	30.1	6.8	12.2	41.7	15.9	0.1	0.0	0.0	C
51-60------------	0.1	27.8	6.0	10.5	38.7	22.7	0.2	0.1	0.0	C

Depth inches	M.E./100 g soil							% Base sat.	pH	P ppm
	Ca	Mg	Mn	K	Na	H	S+			
0- 1------------	6.8	2.2	0.08	0.7	0.1	15.1	25.0	40	5.0	22
1- 5------------	2.1	1.4	0.01	0.3	0.1	6.7	10.6	37	5.3	13
5-16------------	2.4	3.9	tr.	0.5	0.1	18.4	25.3	27	4.6	8
16-24------------	0.5	2.5	tr.	0.5	0.1	18.9	22.5	16	4.7	8
24-29------------	0.2	2.3	tr.	0.5	0.1	18.9	22.0	14	4.5	1
29-39------------	0.1	2.4	tr.	0.4	0.1	17.8	20.8	14	4.4	-1
39-51------------	0.2	2.3	tr.	0.3	<0.1	17.8	20.6	14	4.6	1
51-60------------	0.1	1.9	tr.	0.3	0.1	15.3	17.7	14	4.4	2

Depth inches	Total soil potassium %	Glauconite	Mica	Remarks
0- 1-------	0.55			
5-16-------		Trace	Common	Mostly quartz, heavy minerals quite common
16-24-------	0.82			
39-51-------		1-2%	Common +	Mostly quartz, heavy minerals quite common
51-60-------	0.86	10-15%	Common +	Mostly quartz, heavy minerals quite common

PROFILE NO. 24

Shubuta very fine sandy loam (S47 Miss 59-4)

Location: Approximately 14 miles east of Booneville, 1 mile north of route 30 on country road leading to Corinth, Prentiss County, Mississippi.

Horizon	Depth Inches	Description
A_1	0-2	Grayish-brown (10YR 4/2) very fine sandy loam, streaked with black (probably from burning) carbon material, very weak fine granular (crumb) structure; contains many fine roots; overlain by very thin broomsedge litter.
A_2	2-6	Grayish-brown (10YR 5/2) very fine sandy loam with very weak fine rounded blocky structure; streaked with less carbon than A_1 horizon and containing a few fine brown mottlings.
B_1	6-8 1/2	Red (2.5YR 5/6) silty clay, slightly mottled with yellowish brown, and containing some very fine sand; weak fine subangular blocky structure.
B_{21}	8 1/2-15-1/2	Red (2.5YR 4/6) silty clay with moderate fine to medium subangular blocky structure; friable.
B_{22}	15 1/2-26 1/2	Predominantly red (2.5YR 4/6) silty clay with moderate fine subangular blocky structure; friable, intricately mottled with pale olive, particularly toward bottom of layer.
B_{31}	26 1/2-40	Intricately mottled pale olive and red (2.5YR 4/6) silty clay of low mica content and small amount of very fine sand; massive to coarse blocky structure breaking under slight pressure (wet) to fine blocky aggregates.
B_{32}	40-49	Intricately mottled pale olive (5Y 6/3) and red (10R 4/6) grading thru lighter shades to light yellowish brown, fine sandy clay, with coarse blocky primary structure and fine blocky secondary structure. The olive colored material is heavier textured than the reddish material. Little mica noticeable.
C	49-60	Predominantly pale olive clay containing very small amount of fine sand; intricately mottled with fine to medium sized patches that are red (2.5YR) in center and grade through yellowish red to light yellowish brown near edges; little mica noticeable; massive or weak coarse blocky structure.

Collected by: L. T. Alexander, I. L. Martin, J. K. Ableiter, and L. C. Murphree; December, 1947.

Described by: W. S. Ligon

PROFILE NO. 24

Shubuta very fine sandy loam, Prentiss County, Mississippi.
Lab. Nos. 4862-69 (S47 Miss 59-9-1 thru 8)

Depth inches	Organic matter %	Size classes %								
		Clay	III	USDA silt	VFS	FS	MS	CS	VCS	Horizon
0-2	3.2	6.8	18.8	42.3	38.5	11.4	0.5	0.4	0.1	A_1
2-6	1.5	8.9	19.2	41.7	38.6	10.3	0.2	0.2	0.1	A_2
6-8 1/2	1.0	36.7	1.5	24.8	29.6	8.4	0.2	0.1	0.2	B_1
8 1/2-15 1/2	0.9	52.2	7.4	15.4	25.1	6.6	0.2	0.3	0.2	B_{21}
15 1/2-26 1/2	0.4	52.0	6.3	14.7	25.0	7.5	0.2	0.2	0.4	B_{22}
26 1/2-40	0.2	50.7	6.6	15.9	26.0	6.6	0.2	0.2	0.4	B_{31}
40-49	0.3	45.4	5.6	12.7	24.9	16.1	0.6	0.2	0.1	B_{32}
49-60	0.0	43.1	4.8	10.9	22.7	22.4	0.7	0.1	0.1	C

Depth inches	M.E./100 g soil							% Base sat	pH	P ppm
	Ca	Mg	Mn	K	Na	H	S+			
0-2	2.6	1.0	0.03	0.4	0.1	6.3	10.4	39	5.4	6
2-3	1.7	1.0	0.01	0.2	0.1	4.8	7.8	38	5.2	6
6-8 1/2	3.8	3.2	tr.	0.3	0.1	8.4	15.8	47	5.0	3
8 1/2-15 1/2	3.8	3.8	tr.	0.4	0.1	13.6	21.7	37	4.9	3
15 1/2-26 1/2	1.8	3.9	tr.	0.6	0.1	17.2	23.6	27	4.8	2
26 1/2-40	0.8	3.7	tr.	0.4	0.1	18.6	23.6	21	4.6	4
40-49	0.6	5.3	tr.	0.4	0.2	18.6	25.1	26	4.4	2
49-60	0.4	6.8	tr.	0.4	0.2	18.6	25.4	27	4.3	1

Depth inches	Total soil potassium %	Glauconite	Mica	Remarks
0-2	0.67			
8 1/2-15 1/2		Trace		Mostly quartz, heavies rather common
15 1/2-26 1/2	0.78			
40-49	0.90			
49-60		1-2%	present, muscovite & biotite	Mostly quartz, heavies rather common, some feldspar

PROFILE NO. 25

Shubuta fine sandy loam (S47 Miss 59-5)

Location: Approximately 14 miles east of Booneville, 2-1/4 miles north of Route 30 on country road leading to Corinth, Prentiss County, Mississippi.

Horizon	Depth Inches	Description
A_1	0-1	Grayish-brown (10YR 5/2) fine sandy loam with streaks and splotches of black, (probably due to burning), overlain by very thin broomsedge litter. Very weak fine granular structure; many fine roots.
A_2	1-5 1/2	Light yellowish-brown (10YR 6/4) fine sandy loam with very weak medium to coarse granular structure; few small roots.
B_1	5 1/2-8	Yellowish-red (7.5YR 5/6) fine sandy clay loam, with weak fine subangular blocky structure; friable.
B_2	8-19	Red (2.5YR 4/6) firm silty clay containing some very fine sand; moderate to strong medium subangular blocky structure.
B_3	19-28	Friable fine sandy clay loam with weak medium to coarse blocky structure, predominantly red (2.5YR 4/6) in color but coarsely mottled with pale olive (5Y 6/6) to pale yellow (5Y 7/3) and intermediate colors. Light colored mottlings increase in number and proportion with depth.
C	28-38	Coarsely mottled and streaked with same colors as above, but larger percent of pale olive and pale yellow colors. Soft very friable fine sandy loam to light sandy clay loam. Small but noticeable mica content.
C	38-50	Coarsely mottled and streaked as above, but major color is yellowish red (7.5YR 5/6) rather than red. Soft, smooth, friable fine sandy loam containing some fine mica flakes. Massive.
C	50-65	Approximately the same as next layer above.

Collected by: L. T. Alexander, I. L. Martin, J. W. Moon and M. Lawson, December, 1947.

Described by: W. S. Ligon

PROFILE NO. 25

Shubuta fine sandy loam, Prentiss County, Mississippi
Lab. Nos. 4870-77 (S47 Miss 59-10-1 thru 8)

Depth inches	Organic matter %	Size classes %								Horizon
		Clay	III	USDA silt	VFS	FS	MS	CS	VCS	
0-1	8.0	5.5	17.2	37.5	34.4	22.2	0.2	0.1	0.1	A_1
1-5 1/2	1.2	5.6	17.1	37.1	33.2	23.5	0.3	0.1	0.2	A_2
5 1/2-8	0.8	27.7	17.4	29.9	25.9	16.3	0.2	0.0	0.0	B_1
8-19	0.5	43.1	7.2	12.8	24.6	19.3	0.2	0.0	0.0	B_2
19-28	0.4	37.2	5.0	7.7	25.7	29.1	0.2	0.1	0.0	B_3
28-38	0.2	25.7	2.8	5.6	29.0	39.5	0.2	0.0	0.0	C
38-50	0.2	24.4	2.8	5.9	30.2	39.3	0.2	0.0	0.0	C
50-65	0.0	22.5	3.3	6.9	31.9	38.4	0.2	0.1	0.0	C

Depth inches	M.E./100 g soil							% Base sat	pH	P ppm
	Ca	Mg	Mn	K	Na	H	S+			
0-1	3.1	0.9	0.07	0.4	0.1	12.6	17.2	27	4.7	13
1-5 1/2	0.5	0.4	tr.	0.2	0.1	4.8	6.0	20	4.8	4
5 1/2-8	1.4	2.0	tr.	0.6	0.1	10.0	14.1	29	4.7	2
8-19	3.1	4.0	tr.	0.6	0.2	14.0	21.9	36	4.8	10
19-28	2.8	3.5	tr.	0.5	0.2	14.0	21.0	33	4.7	8
28-38	1.4	3.0	tr.	0.4	0.2	13.0	18.0	28	4.5	10
38-50	0.8	2.2	tr.	0.4	0.2	13.4	17.0	21	4.5	13
50-65	0.5	2.6	tr.	0.4	0.1	13.4	17.0	21	4.5	12

Depth inches	Total soil potassium %	Glauconite	Mica	Remarks
0-1	0.74			
5 1/2-8		Trace minus	Present	Mostly quartz, heavy minerals fairly common, some feldspars
19-28	0.80			
38-50		5-10%	Fairly common, both muscovite and biotite.	Mostly quartz, heavy minerals fairly common, some feldspars.
50-65	0.86			

PROFILE NO. 26

*Starkville fine sandy loam (S48 Miss 53-1)

Location: 4 miles south of College and 1 mile east of Poorhouse road and just north of east and west gravel road connecting Poorhouse and Oktoc roads, Oktibbeha County, Mississippi.

Horizon	Depth Inches	Description
A_1	0-3	Dark grayish-brown to grayish-brown (10YR 4/2) fine sandy loam with crumb structure. Litter from pine and oak trees on surface. Contains many small roots which caused some splotching by organic matter.
B_{21}	3-13	Red (10R 4/6) clay with fine subangular blocky structure; aggregates crush fairly easily under pressure of the fingers. Some dark large and small root channels and few mica grains.
B_{22}	13-21	Dusky red (10R 3/4) heavy fine sandy clay loam with some streaking of gray and yellowish red. Moderate to strong blocky structure; aggregates crush with difficulty with fingers. Some root holes.
B_{31}	21-29	Dusky red (10YR 3/4) sandy clay mottled with light gray (5Y 7/2) and reddish-brown (2.5YR 5/4); coarse blocky structure; aggregates crush with difficulty. Some root holes and mica grains visible.
B_{32}	29-39	Similar to one above except somewhat lighter in texture.
C_1	39-48	Coarsely splotched dark reddish-brown (2.5YR 3/4) and light gray (2.5Y 7/2) compact sandy clay loam with coarse blocky structure; aggregates crush rather easily with fingers. Some very small mica grains and a few root channels.
C_2	48-60	Coarsely splotched reddish-brown (2.5YR 4/4), olive (5Y 5/3) and brownish-yellow (10YR 6/6) fine sandy clay loam with weak fine blocky structure; friable. Numerous mica grains and few root channels.

Collected and described by: H. B. Vanderford, January 6, 1948.

*Tentative Series

*Starkville fine sandy loam, Oktibbeha County, Mississippi.
Lab. Nos. 48118-124 (S 48 Miss 53-1-1 thru 7)

Depth inches	Organic matter %	Size classes %								Horizon
		Clay	III	USDA silt	VFS	FS	MS	CS	VCS	
0-3	5.0	17.7	5.3	17.6	26.5	34.8	1.7	0.9	0.8	A_1
3-13	0.6	59.9	6.5	8.5	13.6	17.2	0.5	0.2	0.1	B_{21}
13-21	0.3	51.8	5.0	7.7	17.1	22.8	0.5	0.1	0.0	B_{22}
21-29	0.2	45.8	5.3	9.0	20.3	24.2	0.6	0.1	0.0	B_{31}
29-39	0.1	43.8	5.5	9.8	20.0	25.3	0.9	0.2	0.0	B_{32}
39-48	0.0	36.6	5.8	11.0	26.7	24.8	0.6	0.2	0.1	C_1
48-60	0.0	34.0	5.7	11.5	27.1	26.8	0.5	0.1	0.0	C_2

Depth inches	M.E./100 g soil							% Base sat	pH	P ppm
	Ca	Mg	Mn	K	Na	H	S+			
0- 3	8.8	1.5	0.01	0.3	0.1	8.2	18.9	57	5.7	35
3-13	14.8	2.9	tr.	0.6	0.1	8.4	26.8	69	5.8	93
13-21	10.1	2.4	tr.	0.4	0.1	16.4	29.4	44	5.0	12
21-29	8.5	2.2	tr.	0.3	0.2	14.7	25.9	43	5.0	12
29-39	4.6	1.5	tr.	0.3	0.1	15.3	21.8	30	4.8	14
39-48	2.7	1.1	tr.	0.2	0.1	16.3	20.4	20	4.6	16
48-60	1.7	0.9	tr.	0.2	0.1	16.6	19.5	15	4.4	17

PROFILE NO. 27

*Starkville fine sandy loam (S48 Miss 53-2)

Location: About 200 yards north of profile No. S48 Miss 53-1, Oktibbeha County, Mississippi.

Horizon	Depth Inches	Description
A_1	0-5	Very dark grayish-brown (2.5Y 3/2) fine sandy loam with crumb structure; fairly high in organic matter with litter of pine and oak leaves on surface; numerous root channels and fine roots.
B_1	5-14	Dark red (10R 3/6) clay with weak fine blocky structure. Some large and fine root channels and small mica grains.
B_{21}	14-23	Compact red (10R 4/6) sandy clay with some mottles of gray and brown; fine blocky structure. Some black concretions present and a few mica grains and root holes.
B_{22}	23-32	Compact but brittle red (10R 4/6) to dark reddish-brown (10R 3/4) sandy clay splotched and mottled with olive gray. Mica grains few and very small. Some root channels.
B_3	32-40	Similar to the above layer except lighter in texture and color and more coarsely splotched with olive gray.
C_1	40-48	Coarsely splotched dark reddish-brown (10R 3/4), yellowish-red (5Y 5/6) and olive gray (5Y 5/2) fine sandy loam with weak blocky structure. Mica grains numerous.
C_2	48-60	Similar to the above layer except aggregates less pronounced and mottles and splotches of lower contrast. Mica grains large.

Collected and described by: H. B. Vanderford, January 6, 1948.

*Tentative series

PROFILE NO. 27

*Starkville fine sandy loam, Oktibbeha County, Mississippi
Lab. Nos. 48125-131 (S48 Miss 53-2-1 thru 7)

Depth inches	Organic matter %	Size classes %								Horizon
		Clay	III	USDA silt	VFS	FS	MS	CS	VCS	
0-5	2.6	7.0	15.7	38.3	18.6	31.2	3.8	1.0	0.1	A_1
5-14	0.2	31.4	18.2	32.3	12.5	19.9	2.4	0.9	0.6	B_1
14-23	0.0	42.0	14.5	25.1	10.9	18.8	2.3	0.7	0.2	B_{21}
23-32	0.0	43.9	12.0	20.4	11.1	20.9	2.8	0.7	0.2	B_{22}
32-40	0.0	39.9	10.2	15.9	10.9	27.4	4.7	1.1	0.1	B_3
40-48	0.0	37.4	9.9	14.9	9.7	31.3	5.5	1.2	0.0	C_1
48-60	0.0	35.8	6.7	9.3	7.5	38.4	7.8	1.2	0.1	C_2

Depth inches	M.E./100 g soil							% Base sat	pH	P ppm
	Ca	Mg	Mn	K	Na	H	S+			
0-5	3.3	0.8	0.04	0.2	0.1	4.2	8.6	51	5.7	4
5-14	6.8	0.8	tr.	0.2	0.1	5.0	12.9	61	5.6	3
14-23	8.1	1.0	tr.	0.2	0.1	6.7	16.1	58	5.5	1
23-32	8.8	1.6	tr.	0.2	0.1	7.5	18.2	59	5.3	1
32-40	9.9	1.4	tr.	0.3	0.1	5.7	17.4	67	5.6	2
40-48	9.2	1.4	tr.	0.3	0.1	5.0	16.0	69	5.7	4
48-60	9.6	1.3	tr.	0.2	0.1	4.6	15.8	71	6.1	1

PROFILE NO. 28

*Starkville very fine sandy loam (S48 Miss 53-3)

Location: Two miles south of Mississippi State College on the Animal Husbandry Farm, Oktibbeha County, Mississippi.

Horizon	Depth Inches	Description
Ap	0-4	Very dark grayish-brown (10YR 3/2) very fine sandy loam with crumb structure; mellow. High in organic matter and surface covered with litter of oak and hickory leaves.
B_2	4-15	Red (10R 4/6) sandy clay with fine blocky structure; a few specks of olive gray on the aggregates; plastic; some mica grains and root channels.
B_3	15-25	Coarsely mottled and splotched dark reddish-brown (2.5YR 3/4) to dark red (10R 3/6) and olive gray (5Y 5/2) fine sandy clay with blocky structure; crush easily under pressure of fingers. Mica flakes and root channels common.
C_1	25-32	Profusely mottled and splotched dark red (10R 3/6) and pale olive (5Y 6/3) light sandy clay loam; soft; very weak blocky structure.
C_2	32-44	Dark red (10R 3/6) tough sandy clay mottled and splotched with olive gray (5Y 2/2) to form a variegated color pattern. Massive with some evidence of aggregation.
D	44-60	Coarsely splotched light gray (5Y 7/1) and yellow (2.5Y 7/6-7/8) tough plastic heavy clay. Difficult to dig and breaks along old cracks.

Collected and described by: H. B. Vanderford; January 6, 1948.

*Tentative Series

PROFILE NO. 28

*Starkville very fine sandy loam, Oktibbeha County, Mississippi
Lab. Nos. 48138-143 (S-48 Miss 53-3-1 thru 6)

Depth inches	Organic matter %	Size classes %								Horizon
		Clay	III	USDA silt	VFS	FS	MS	CS	VCS	
0- 4	3.1	11.6	13.1	30.4	33.0	21.8	1.7	1.0	0.5	A_p
4-15	0.6	61.5	7.2	14.0	15.8	8.1	0.4	0.2	0.0	B_2
15-25	0.2	47.9	8.7	15.9	22.1	13.4	0.6	0.1	0.0	B_3
25-32	0.0	36.6	4.1	5.4	16.8	27.4	12.8	1.0	0.0	C_1
32-44	0.0	30.8	6.9	10.8	29.2	26.0	3.0	0.2	0.0	C_2
44-60	0.0	56.2	16.0	23.9	13.9	4.9	0.5	0.4	0.2	D

Depth inches	M.E/100 g soil							% Base sat	pH	P ppm
	Ca	Mg	Mn	K	Na	H	S+			
0- 4	4.7	0.8	0.03	0.1	0.1	8.4	14.1	40	5.4	6
4-15	10.8	1.9	tr.	0.2	0.2	11.5	24.6	53	5.0	4
15-25	7.2	1.6	tr.	0.2	0.2	11.3	20.5	45	4.9	2
25-32	5.3	2.4	tr.	0.2	0.7	10.9	19.5	44	4.7	8
32-44	3.3	1.2	tr.	0.2	0.3	9.6	14.6	34	4.9	1
44-60	13.8	6.7	tr.	0.4	3.8	13.2	37.9	65	4.0	1

PROFILE NO. 29

*Starkville fine sandy loam (S48 Miss 53-4)

Location: Two miles north of Mississippi State College on land under the supervision of the Forestry Department, Oktibbeha County, Mississippi.

Horizon	Depth inches	Description
A_2	0-4	Light yellowish brown (2.5Y 6/4) to pale yellow fine sandy loam with weak granular structure. High in organic matter and mellow. Litter of oak, pine and cedar leaves on surface.
B_{21}	4-14	Reddish brown (2.5Y 4/4-4/6) clay with subangular blocky structure and some mica specks; plastic and tough. Some large and small root holes.
B_{22}	14-20	Brownish yellow (10YR 6/6) sandy clay with small mottles of dark reddish brown (2.5YR 4/4) and gray (10YR 6/1). Blocky structure that crushes easily; friable. Few mica specks and root holes.
B_{31}	20-29	Coarsely splotched dusky red (10R 3/4) and strong brown (7.5YR 5/6) friable sandy clay loam with moderate coarse blocky structure. Few mica grains and root holes.
B_{32}	29-38	Coarsely splotched dark reddish brown (2.5YR 3/4) and light olive gray (5Y 6/2) tough sandy clay with moderate coarse blocky structure. Few small mica grains and root holes.
C	38-51	Coarsely mottled and splotched brownish-yellow (10YR 6/8) and pale olive (5Y 6/3) fine sandy clay full of mica grains. Massive; fairly tough and plastic; few root holes.

Collected and described by: H. B. Vanderford, January 6, 1948.

*Tentative series.

PROFILE NO. 29

*Starkville fine sandy loam, Oktibbeha County, Mississippi
Lab. Nos. 48138-143 (S48 Miss 53-4-1 thru 6)

Depth inches	Organic matter %	Size classes %								Horizon
		Clay	III	USDA silt	VFS	FS	MS	CS	VCS	
0-4------------	2.8	12.1	14.8	34.1	21.3	18.2	8.5	5.2	0.6	A_2
4-14------------	0.6	56.0	7.7	12.6	10.4	13.8	4.8	2.3	0.1	B_{21}
14-20------------	0.2	44.8	6.5	10.2	14.6	25.2	3.5	1.7	0.0	B_{22}
20-29------------	0.2	38.6	6.7	10.5	19.9	27.5	2.4	1.0	0.1	B_{31}
29-38------------	0.1	33.6	7.2	11.5	23.5	29.6	0.8	1.0	0.0	B_{32}
38-51------------	0.1	30.8	7.3	12.9	26.3	27.1	1.6	1.3	0.0	C

Depth inches	M.E./100 g soil							% Base sat	pH	P ppm
	Ca	Mg	Mn	K	Na	H	S+			
0-4------------	4.2	0.6	0.02	0.2	0.1	8.0	13.1	39	5.0	6
4-14------------	13.0	2.1	tr.	0.3	0.1	13.2	28.7	54	5.0	15
14-20------------	6.3	1.1	tr.	0.3	0.1	17.8	25.6	30	4.8	1
20-29------------	5.3	0.9	tr.	0.3	0.1	18.0	24.6	27	4.7	3
29-38------------	6.5	0.8	tr.	0.3	0.1	16.3	24.0	32	4.6	2
38-51------------	13.9	1.2	tr.	0.3	0.1	9.6	25.1	62	4.3	3

PROFILE NO. 30

*Starkville fine sandy loam, shallow phase (S48 Miss 53-5)

Location: One fourth mile southwest of profile No. S48 Miss 53-4, Oktibbeha County, Mississippi.

Horizon	Depth inches	Description
A_p	0-5	Dark yellowish gray fine sandy loam with crumb structure; high in organic matter. Heavy surface litter of oak, pine and cedar leaves.
B_2	5-15	Reddish brown to brown clay with fine blocky structure. Few mica grains, large root channels, and few dark specks.
B_{31}	15-26	Coarsely splotched and mottled reddish brown and olive gray heavy sandy clay with distinct blocky structure; aggregates crush rather easily to brownish yellow mass. Some mica grains and root channels.
B_{32}	26-35	Brownish yellow very fine sandy clay mottled with reddish brown and gray; plastic. Very weak blocky structure; aggregates crush easily. Some mica grains and root holes.
C	35-41	Brownish yellow clay loam slightly mottled with gray and yellowish red; some mica grains and small root holes—lying over rotten chalky limestone.
D	41-48	Weathered chalky limestone with spots of yellow and orange clay and other impurities.

Collected and described by: H. B. Vanderford; January 6, 1948.

*Tentative series

*Starkville fine sandy loam, shallow phase, Oktibbeha County, Mississippi
Lab. Nos. 48144-149 (S48 Miss 53-5-1 thru 6)

Depth inches	Organic matter %	Size classes %								Horizon
		Clay	III	USDA silt	VFS	FS	MS	CS	VCS	
0-5	3.9	12.3	7.6	18.6	27.2	24.9	10.7	5.9	0.4	Ap
5-15	0.4	47.9	5.9	9.9	14.6	23.7	2.7	1.2	0.0	B_2
15-26	0.3	37.6	6.0	9.8	21.2	28.7	1.6	0.8	0.3	B_{31}
26-35	0.1	33.0	6.4	11.0	24.9	28.2	1.8	0.9	0.2	B_{32}
35-41	0.1	30.9	6.9	11.8	27.3	27.6	1.6	0.8	0.0	C
41-48	0.2	23.2	24.4	29.6	18.9	21.3	3.0	3.0	1.0	D

Depth inches	M.E./100 g soil							% Base sat	pH	P ppm
	Ca	Mg	Mn	K	Na	H	S+			
0-5	14.0	0.8	0.01	0.2	0.1	4.6	19.7	77	6.6	17
5-15	9.9	1.0	tr.	0.4	0.1	18.9	30.3	38	4.5	6
15-26	8.9	0.8	tr.	0.4	0.1	16.4	26.6	38	4.3	4
26-35	10.3	0.5	tr.	0.3	0.1	12.2	23.4	48	4.6	4
35-41	13.1	0.4	tr.	0.3	0.1	9.6	23.5	39	4.6	4
41-48	41.8	0.4	tr.	0.2	0.1	0.4	42.9	99	7.7	1

PROFILE NO. 31

Safford loam (S49 Tenn 20-1)

Location: Decatur County, Tennessee, 1-1/2 miles north of New Prospect Church. On B-C slopes of a narrow ridge above steeper slopes.

Horizon	Depth inches	Description
A_0, A_1	0-1	Black to very dark brown (10YR 2/1-2/2) loose, fluffy, organic matter consisting of partially decomposed hardwood leaves, stems, twigs, and fine tree roots; mingled with yellowish-brown (10YR 5/4) silt loam toward bottom of layer.
A_2	1-4	Yellowish-brown (10YR 5/4), very friable silt loam, essentially structureless. Contains numerous fine roots, partially decayed roots, fine root holes and worm holes.
A_3	4-8	Yellowish-red (5YR 5/6) friable silty clay loam, coarsely mottled with few low contrast mottles of strong brown (7.5YR 5/6). Weak fine to medium blocky structure; somewhat porous. Numerous roots and fine root holes and worm holes.
B_1	8-11 1/2	Slightly redder than yellowish-red (5YR 4/6) firm silty clay with strong fine and medium angular blocky structure; slightly sticky (moist) and plastic (moist). Contains a few vertical streaks of brown (10YR 4/3) along old root channels and worm holes.
B_{21}	11 1/2-18	Red (2.5YR 4/6) firm silty clay with moderate fine to medium angular blocky structure; slightly sticky (moist) and plastic (moist); contains a few fine low contrast mottles of yellowish red (5YR 4/6) to strong brown (7.5YR 5/6).
B_{22}	18-30	Red (2.5YR 4/6) friable to firm silty clay mottled with yellowish-red (5YR 4/6) and strong brown (7.5YR 5/6), slightly stick and plastic when moist; strong very fine angular blocky structure. Mottles small to medium, common, low contrast.
B_3	30-43	Dominantly red (2.5YR 4/8) friable to firm silty clay strongly mottled with pale olive (5Y 6/3) to pale yellow (5Y 7/3); strong fine blocky structure; slightly sticky (moist). Mottles coarse, numerous, and high contrast. Occasional rounded black concretions, bean-sized.
C_1	43-55	Strongly mottled pale yellow (5Y 8/3) and dark red (2.5YR 3/6) to yellowish-red (5YR 5/8), smooth friable micaceous heavy silty clay loam with strong medium to coarse blocky structure. Red mottles comprise approximately 50 percent of area, are medium to large sized, prominent, dark red in centers and yellowish red toward edges. Color of mixed and kneaded material is yellowish red (5YR 4/6).
C_2	55-60+	Predominantly pale yellow (5Y 8/3) massive, smooth and friable micaceous silty clay which feels slick under pressure. Streaked with brownish yellow (10YR 6/6) and dark red (2.5YR 3/6). Streaks and mottled are thin, far apart, few, and prominent.

Collected and described by: L. E. Odom and W. S. Ligon; January 12 and 13, 1949.

PROFILE NO. 31

Safford loam, Decatur County, Tennessee.
Lab. Nos. 49151-159 (S49 Tenn 20-1-1 thru 9)

Depth inches	Size classes %								Horizon
	Clay	III	USDA silt	VFS	FS	MS	CS	VCS	
0- 1	16.8	22.6	49.1	23.4	6.0	1.0	1.8	1.9	A_0, A_1
1- 4	26.3	23.4	47.4	21.0	3.4	0.4	0.7	0.8	A_2
4- 8	13.7	24.1	53.2	24.9	5.0	0.7	1.1	1.4	A_3
8-11 1/2	51.0	12.6	27.8	16.0	2.5	0.5	1.1	1.1	B_1
11 1/2-18	54.0	9.7	21.8	19.4	2.8	0.4	0.8	0.8	B_{21}
18-30	52.9	7.9	18.9	21.6	4.8	0.4	0.7	0.7	B_{22}
30-43	48.7	8.1	18.8	22.1	4.2	0.9	2.1	3.2	B_3
43-55	41.9	7.3	17.9	35.0	4.6	0.3	0.2	0.1	C_1
55-60+	37.9	6.8	16.0	37.4	7.8	0.5	0.3	0.1	C_2

Depth inches	M.E./100 g soil							% Base sat	pH	% O.C.
	Ca	Mg	Mn	K	Na	H	S+			
0- 1	10.2	2.2	0.17	0.3	0.1	9.8	22.8	57	5.4	4.49
1- 4	3.0	1.2	0.05	0.2	0.1	4.5	9.0	51	5.2	0.98
4- 8	5.2	2.2	0.01	0.2	0.1	6.5	14.2	54	5.0	0.72
8-11 1/2	6.8	4.4	0.01	0.5	0.1	15.8	27.6	43	4.8	0.54
11 1/2-18	5.2	4.5	0.01	0.5	0.1	17.3	27.6	37	4.6	0.41
18-30	2.7	3.8	0.01	0.4	0.1	17.6	24.5	28	4.6	0.22
30-43	2.9	5.8	0.01	0.4	0.1	17.4	26.6	35	4.6	0.20
43-55	3.6	7.4	0.01	0.5	0.1	17.4	29.0	40	4.2	0.12
55-60+	4.9	8.9	0.01	0.4	0.2	14.2	28.6	50	4.1	0.10

55-60+
Glauconite 5-8 percent.
Mica, mostly muscovite 15 percent +
Orthoclase 5 percent.
Remainder mostly quartz.

PROFILE NO. 32

Safford loam (S49 Tenn 20-2)

Location: Decatur County, Tennessee, 3/4 mile north of New Prospect Church. On C slope, midway down hill.

Horizon	Depth inches	Description
A_0, A_1	0-1	Black to dark brown (10YR 2/1 - 2/2) loose mixture of well and partly decomposed hardwood leaves, twigs, and stems, and yellowish-brown (10YR 5/4) silt loam, the latter dominant toward the bottom of layer.
A_2	1-3	Yellowish-brown (10YR 5/4) friable silt loam, very weak medium blocky structure to structureless. Numerous small roots and root holes.
A_3	3-5 1/2	Strong brown (7.5YR 5/6) friable light silty clay loam; weak to moderate fine blocky structure; color toward top of layer mingled with reddish yellow (7.5YR 6/6). Numerous pin holes; some fine roots and root holes.
B_1	5 1/2-16	Yellowish-red (5YR 4/6) friable to firm silty clay with strong fine to medium angular blocky structure; slightly sticky and plastic (moist); a very few fine to medium low contrast mottles of strong brown (7.5YR 4/6), hardly noticeable. An occasional black concretion, pea-sized.
B_{21}	16-21	Dominantly yellowish-red (5YR 4/6) friable to firm silty clay with moderate to strong fine angular blocky structure; slightly sticky and plastic (moist); mottled with red (2.5YR 4/6) and strong brown (7.5YR 5/6). Mottles fine, common, of low contrast.
B_{22}	21-29	Mottled red (2.5YR 4/8), yellowish-red (5YR 5/6), and strong brown (7.5YR 5/6), friable, soft, micaceous silty clay loam with moderate fine to medium blocky structure. Mottles fine, highly mingled, low contrast.
B_3	29-38	Strongly mottled as in C_1 horizon, but mottles are finer and more intricate. Moderate fine blocky structure; slightly sticky (moist); smooth, friable, micaceous silty clay loam.
C_1	38-46	Strongly mottled pale olive (5Y 6/3) or pale yellow (5Y 7/3) friable to firm silty clay with strong brown (7.5YR 5/6), and red (2.5YR 4/6) moderate very fine blocky structure; slightly sticky and plastic (moist). Mottles numerous, size variable, of high contrast. The darker portions less heavy textured than the light portions.
C_2	46+	Pale yellow (5Y 7/3) smooth, soft, micaceous, material; very friable and with a slick silty clay feel under pressure. Massive with tendency to weak medium to coarse platy structure. A few thin streaks and mottles of reddish yellow (7/5YR 6/8) at edges and strong brown (7.5YR 5/8) at centers. A few small roots.

Collected and described by: L. E. Odom and W. S. Ligon, January 12 and 13, 1949.

PROFILE NO. 32

Safford loam, Decatur County, Tennessee
Lab. Nos. 49160-168 (S49 Tenn 20-2-1 thru 9)

Depth inches	Size classes %								Horizon
	Clay	III	USDA silt	VFS	FS	MS	CS	VCS	
0- 1	15.5	19.7	47.7	29.2	4.4	0.9	1.2	1.1	A_0, A_1
1- 3	14.9	17.6	48.8	28.0	3.4	0.8	1.4	2.7	A_2
3-5 1/2	19.9	22.7	48.8	24.1	3.1	0.6	1.1	2.4	A_3
5 1/2-16	57.1	13.0	23.8	15.9	1.5	0.3	0.7	0.7	B_1
16-21	59.1	8.6	15.8	22.0	2.2	0.2	0.4	0.3	B_{21}
21-29	52.2	7.8	15.2	27.7	4.0	0.4	0.4	0.1	B_{22}
29-38	48.1	8.7	15.8	31.4	4.2	0.2	0.2	0.1	B_3
38-46	54.1	9.7	19.2	21.6	3.2	0.6	1.0	0.3	C_1
46+	45.2	10.8	21.7	26.8	5.1	0.4	0.6	0.2	C_2

Depth inches	M.E./100 g soil							% Base sat	pH	% O.C.
	Ca	Mg	Mn	K	Na	H	S+			
0- 1	6.9	1.7	0.12	0.4	0.1	13.5	22.7	41	5.2	5.52
1- 3	0.6	0.7	0.02	0.2	0.1	8.4	10.0	16	4.6	1.11
3-5 1/2	2.2	1.5	0.01	0.2	0.1	7.6	11.5	34	4.8	0.71
5 1/2-16	2.8	4.8	0.01	0.4	0.1	22.8	30.9	26	4.5	0.47
16-21	2.2	5.9	0.01	0.4	0.1	25.3	33.9	25	4.5	0.34
21-29	2.0	5.6	0.01	0.4	0.2	22.3	30.5	27	4.6	0.24
29-38	3.0	7.0	0.01	0.4	0.2	21.6	32.2	33	4.5	0.14
38-46	6.1	11.0	0.01	0.4	0.4	23.7	41.6	43	4.2	0.10
46+	6.9	9.5	0.01	0.4	0.4	16.5	33.7	51	4.0	0.10

46+
A little less glauconite and a little more biotite.
Otherwise about the same as profile No. S49 Tenn 20-1, 55-60"+.

PROFILE NO. 33

Safford sandy clay loam (S49 Tenn 39-3)

Location: Henderson County, Tennessee, 1/2 mile north of Chesterfield; about 1/3 down D slope from ridge crest.

Horizon	Depth Inches	Description
A_0, A_1	0-1	Black to dark brown (10YR 2/1 - 2/2) loose mixture of well and partly decomposed hardwood leaves, twigs, stems, and yellowish-brown (10YR 5/4) silt loam, the latter dominant toward bottom of layer.
A_2	1-2 1/2	Intimately mingled yellowish-brown (10YR 5/6) and dark grayish-brown (10YR 4/2) very friable silt loam to very fine sandy loam with weak coarse granular structure; containing many small roots and some humus from layer above.
A_3	2 1/2-5 1/2	Dominantly strong brown (7.5YR 5/6) very friable silt loam (some very fine sand) with weak coarse granular to fine angular blocky structure; porous; prominent mingling of yellowish brown (10YR 5/4) along root and worm channels.
B_{21}	5 1/2-8	Yellowish-red (5YR 4/6) friable to firm silty clay with strong fine angular blocky structure; some brown (7.5YR 4/4) intrusions from layer above along worm and root channels.
B_{22}	8-18	Yellowish-red (5YR 4/6) silty clay with strong fine blocky structure; friable to firm; slightly sticky (moist), plastic (moist). Essentially free of mottling, but with an occasional faint, fine mottle of reddish yellow or light olive.
B_{31}	18-25	Dominantly yellowish-red (5YR 4/6) friable heavy silty clay loam with moderate medium angular blocky structure; slightly sticky and slightly plastic (moist). Olive gray (5Y 4/2) and reddish-yellow (7.5YR 6/8) mottles are few, medium sized and distinct.
B_{32}	25-35	Dominantly yellowish-red (5YR 4/6) mottled with olive gray (5Y 4/2) and a little reddish yellow (7.5YR 6/8) friable, soft, micaceous silty clay loam with weak medium to coarse angular blocky structure.
C_1	35-42	Strongly mottled and streaked yellowish-red (5YR 4/6), reddish-yellow (7.5YR 6/8), olive gray (5Y 4/2) and other shades soft, very friable, micaceous silt loam with weak fine blocky structure. Mottles and streaks complex in pattern and no one color dominant.
C_2	42+	Dominantly pale olive (5Y 6/3) massive very friable micaceous "greensand" material with fine sandy loam feel. Streaked and mottled with brownish-yellow (10YR 6/6) to yellowish-red (5YR 4/8), chiefly the former. Mottles and streaks common, irregular in size, and high to low contrast.

Collected and described by: L. E. Odom and W. S. Ligon, January 12 and 13, 1949.

PROFILE NO. 33

Safford sandy clay loam, Henderson County, Tennessee.
Lab. Nos. 49169-49177 (S49 Tenn 39-3-1 thru 7)

Depth inches	Size classes								Horizon
	Clay	III	USDA silt	VFS	FS	MS	CS	VCS	
0-1	1.0	10.5	18.5	31.4	21.3	2.5	2.8	2.5	A_0, A_1
1-2-1/2	19.6	9.0	18.3	35.6	19.7	2.4	2.4	2.0	A_2
2 1/2-5 1/2	21.3	8.5	17.1	37.4	18.5	1.9	2.0	1.8	A_3
5-1/2-8	51.9	7.0	11.8	23.4	10.8	0.8	1.0	0.3	B_{21}
8-18	47.8	4.2	9.8	28.5	13.2	0.4	0.2	0.1	B_{22}
18-25	38.7	3.8	8.4	32.9	18.9	0.4	0.4	0.3	B_{31}
25-35	31.8	3.8	8.7	37.8	20.6	0.6	0.5	0.0	B_{32}
35-42	24.1	3.6	8.7	43.5	22.9	0.4	0.3	0.1	C_1
42+	21.9	3.8	9.2	47.0	20.7	0.5	0.5	0.2	C_2

Depth inches	M.E./100 g of soil							% Base sat	pH	% O.C.
	Ca	Mg	Mn	K	Na	H	S+			
0-1	19.3	3.8	0.11	0.6	0.6	8.3	32.3	74	6.4	5.80
1-2 1/2	9.2	2.7	0.03	0.4	0.2	6.3	18.8	67	6.0	2.24
2 1/2-5-1/2	4.6	2.3	0.01	0.5	0.1	6.7	14.2	53	5.2	0.80
5-1/2-8	6.5	4.8	0.01	1.0	0.1	19.8	32.2	38	4.6	0.75
8-18	1.9	4.1	0.01	0.8	0.1	25.4	32.3	21	4.4	0.32
18-25	1.1	3.5	0.01	0.6	0.1	24.4	29.7	18	4.5	0.22
25-35	1.5	3.2	0.01	0.4	0.2	22.0	27.3	19	4.5	0.11
35-42	1.7	3.2	0.01	0.3	0.1	20.9	26.2	20	4.6	0.10
42+	2.8	3.4	0.01	0.3	0.2	17.0	23.7	28	4.2	0.08

42"+ Glauconite 25-30 percent.
More feldspar than profiles No. S49 20-1 and No. S49 20-2, otherwise the same.

PROFILE NO. 34

Safford very fine sandy loam (S49 Tenn 39-4)

Location: Henderson County, Tennessee. Road cut in C slope three hundred yards from Tennessee Road 100, about 1-1/2 miles west of Chesterfield.

Horizon	Depth Inches	Description
A_1	0-2	Dominantly brown (10YR 4/3) very friable fine sandy loam containing much very dark grayish-brown (10YR 3/2) partly decomposed organic matter and many fine roots; weak to moderate coarse granular structure.
B_{21}	2-8	Dominantly red (2.5YR 4/6) silty clay with strong fine blocky structure; slightly sticky and slightly plastic (moist); faint mottles of yellowish-red (5YR 4/6) and of brown (7.5YR 4/2) along root channels.
B_{22}	8-18	Red (2.5YR 4/8) silty clay with strong fine blocky structure; friable to firm, slightly sticky and plastic (moist). A very few fine low contrast mottles of reddish yellow with slight olive cast; an occasional bean-sized hard black concretion.
B_{23}	18-28	Similar to B_3 horizon but higher proportion of red to pale olive material. Friable to firm silty clay, red dominant; slightly sticky and plastic (moist).
B_3	28-42	Strongly mottled red (2.5YR 4/6) and pale olive (5Y 6/3) friable to firm silty clay to silty clay loam with strong fine and medium blocky structure; sticky and plastic (moist), the red spots being heavy textured and sticky, the olive material more friable and less sticky and plastic.
C_1	42-60	Strongly mottled strong brown (7.5YR 5/8), red (2.5YR 4/6), and pale olive (5Y 6/3) friable micaceous, smooth silty clay loam with weak fine blocky structure. Mottles coarse, many, prominent; strong brown dominant.
C_2	60+	Highly variegated olives, yellows, and browns, with a little red, very friable fine sandy loam. Dominant colors are probably pale olive (5Y 6/3) and reddish yellow (7.5YR 6/8). Colors intricately mingled. Glauconitic.

Collected and described by: L. E. Odom and W. S. Ligon, January 12 and 13, 1949

Note: This profile has been eroded, is somewhat redder in the B horizon than the others sampled thus far, and is probably shallower to greensand.

Safford very fine sandy loam, Henderson County, Tenn.
Lab. Nos. 49178-184 (S49 Tenn 39-4-1 thru 7)

Depth inches	Size classes %								Horizon
	Clay	III	USDA silt	VFS	FS	MS	CS	VCS	
0- 2	15.9	11.1	29.7	29.0	17.0	2.6	3.1	2.7	A_1
2- 8	54.7	11.0	18.5	15.4	8.1	0.9	1.1	1.3	B_{21}
8-18	61.6	7.3	11.9	15.1	9.0	1.0	1.1	0.3	B_{22}
18-28	62.5	6.1	10.0	13.6	11.7	1.0	1.0	0.2	B_{23}
28-42	45.8	6.4	10.5	20.5	18.7	2.0	1.9	0.6	B_3
42-60	41.5	7.4	11.5	23.1	19.6	2.0	1.6	0.7	C_1
60+	39.1	9.3	15.3	24.1	17.3	2.2	1.7	0.3	C_2

Depth inches	M.E./100 g soil							% Base sat.	pH	% O.C.
	Ca	Mg	Mn	K	Na	H	S+			
0-2	9.5	3.1	0.10	0.5	0.2	10.0	23.4	57	5.6	3.21
2-8	5.8	4.6	0.01	0.7	0.1	19.8	21.0	36	4.9	0.90
8-18	4.6	5.4	0.01	0.7	0.1	26.2	37.0	29	4.8	0.34
18-28	3.8	6.0	0.01	0.6	0.1	28.3	38.8	27	4.6	0.22
28-42	4.4	5.8	0.01	0.6	0.2	23.9	34.9	32	4.3	0.14
42-60	6.0	6.0	0.01	0.4	0.2	16.8	29.4	43	4.4	0.08
60+	8.0	7.6	0.01	0.4	0.3	13.3	29.6	55	4.3	0.08

60"+
Glauconite 50 percent or more.
Proportion of other minerals about the same.

The glauconite in the Henderson County samples appears less weathered than that from Decatur C. County. This is particularly true of Lab. No. 49184 (S49 Tenn 39-4-7).

PROFILE NO. 35

Boswell fine sandy loam (4544107-2)

Location: Henderson County, Texas, 3.65 miles west of Athens in a forested area just north of U. S. Highway No. 31. This location is approximately 405 feet above sea level in the post oak belt of northeast Texas within the outcrop of Wilcox formation.

Vegetation: Thinly forested with medium-size and mature trees principally of post oak and blackjack oak with a few southern red oak, hickory and elm. The undergrowth is moderately thick consisting of oak and persimmon sprouts, winged elm, bull briars, indigo and a scattering of weeds and short grasses in the more open places. Cut-over forest that has not been cultivated.

Topography: Plane surface of 5% grade, sloping west, in gently rolling to rolling erosional upland.

Horizon	Depth inches	Description
A_1	0-2 1/2	Dark grayish-brown (2.5Y 4/2) when moist, light brownish-gray (10YR 6/2) when dry, nearly loose fine sandy loam with poorly developed fine granular structure. There is slight variegation in color with very low contrast. Roots are fairly numerous and evenly distributed. The boundary between this horizon and the one below is not well defined.
A_2	2 1/2-5 1/2	Brown (10YR 5/3) when moist, light gray (10YR 7/2) when dry, nearly loose fine sandy loam with poorly developed fine granular structure. Roots are fairly numerous and evenly distributed. A very thin and somewhat wavy transition layer is present between this horizon and the one below.
B_2	5 1/2-14	Red (2.5YR 4/8) when moist, red (2.5YR 5/8) when dry, clay with moderately developed fine and medium blocky structure. The lower part of horizon is finely mottled with light yellowish-brown of low contrast. When moist uncrushed surfaces are slightly darker than crushed. The material is firm in place but breaks down readily when moist; it is strongly plastic when wet, and very hard when dry. Roots are not so numerous as in the overlying horizons. This grades into the horizon below.
B_{31}	14-22	Sandy clay or light clay mottled red (2.5YR 4/8) and pale olive (5Y 6/3) when moist; red (2.5YR 5/8) and pale yellow (5Y 7/3) when dry. Mottlings are of high contrast. The material digs out in irregular pieces; is friable when moist and breaks down readily into weakly developed medium and coarse blocky aggregates. It is moderately plastic when wet and hard to very hard when dry. This is a gradational horizon and the proportion of strong brown increases and pale yellow decreases with increasing depth.
B_{32}	22-31	Light gray (2.5Y 7/2) mottled with red (2.5YR 4/8) clay with pockets of sandy clay loam or sandy clay. Colors are essentially the same when moist as when dry. Mottlings are fine to medium and of high contrast. Displaced pieces break down readily into weakly developed medium and coarse blocky aggregates. The material is firm when moist, moderately plastic when wet, and very hard when dry. It grades into the horizon below.
B_{33}	31-39	Light gray (2.5Y 7/2) mottled with red (2.5YR 4/8) massive clay; strongly plastic when wet, very firm when moist, and very hard when dry. Colors are essentially the same whether moist or dry. Mottlings are of high contrast and shift to reddish-yellow (7.5YR 6/8) in the lower part of the horizon. This material grades into that below.
B_{34}	39-48	Uniformly mottled light gray (2.5Y 7/2) reddish-yellow (7.5YR 6/8) massive clay with small pockets of sandy clay loam and sandy clay. Colors are essentially the same whether moist or dry. Mottlings are of medium contrast. The material is strongly plastic when wet, very firm when moist, and very hard when dry. This grades into the material below.

Horizon	Depth inches	Description
C	48-55	Uniformly mottled light gray (2.5Y 7/2) and reddish-yellow (7.5YR 6/8) stratified clays and sandy clay loams. The proportion of reddish yellow is higher than in layer above. Colors are about the same whether moist or dry. The material is friable when moist.
C	55-58	Mottled light gray (2.5Y 7/2) and reddish-yellow (7.5YR 6/8) massive sandy clay. It is strongly plastic when wet, very firm when moist, and very hard when dry. Mottlings are of medium contrast.

Sampled and described by: Alexander, Martin, Shearin, Simonson, and Templin; June, 1945.

Boswell fine sandy loam, Henderson County, Texas.
Lab. Nos. 45562-570 (4544107-2-1 thru 9)--Average annual ppt. inches--35.53.

Depth inches	Size classes %								
	Clay	III	USDA silt	VFS	FS	MS	CS	VCS	Horizon
0-2.5	6.7	7.4	19.4	24.4	41.4	6.7	1.3	0.1	A_1
2.5-5.5	7.9	8.2	19.9	23.6	40.4	6.5	1.3	0.4	A_2
5.5-14	44.3	11.4	20.3	11.8	19.1	3.8	0.6	0.1	B_2
14-22	32.7	7.5	14.5	11.7	30.2	8.8	1.8	0.3	B_{31}
22-31	34.1	10.7	19.8	18.6	22.9	3.6	0.9	0.1	B_{32}
31-39	41.4	20.9	32.6	11.7	12.8	1.3	0.2	0.0	B_{33}
39-48	29.9	13.7	27.6	22.2	19.0	1.1	0.2	0.0	B_{34}
48-55	23.8	10.6	19.3	17.0	36.0	3.5	0.4	0.0	C
55-58	27.2	17.7	31.0	16.7	22.3	2.5	0.3	0.0	C

Depth inches	M.E./100 g soil						% B. sat	pH	% O.C.	P ppm
	Ca	Mg	K	Mn	H	S+				
0-2.5	3.6	.8	.3	.01	2.4	7.1	66	6.0	1.01	9.6
2.5-5.5	1.7	.8	.3	T+	1.0	3.8	74	6.2	.36	6.0
5.5-14	7.0	5.1	.9	T	6.9	19.9	65	4.6	.47	6.0
14-22	1.2	2.6	.5	T	10.2	14.5	30	4.3	.19	5.2
22-31	2.7	4.2	.4	T	10.3	17.6	42	4.2	.17	4.8
31-39	5.3	6.6	.4	T	12.7	25.0	49	4.1	.22	2.4
39-48	4.9	6.1	.3	T	8.6	19.9	57	4.1		4.8
48-55	4.6	4.4	.3	T	4.4	13.7	68	4.7		4.8
55-58	5.8	.2	.4	T	3.6	10.0	64	4.8		3.2

PROFILE NO. 36

Boswell fine sandy loam (4544107-3)

Location: Henderson County, Texas; 4.6 miles west of Athens in thinly forested pastured upland north of U.S. Highway No. 31. This location is approximately 400 feet above sea level in the post oak belt of northeast Texas within the outcrop of the Wilcox formation.

Vegetation: Cut-over forest with a few mature trees remaining. Forest species consist largely of post oak with some southern red oak, hickory, winged elm, and ash. The undergrowth consists of oak sprouts, scrubby slippery elm, prickly ash, haw, indigo, poison ivy, bull briars, with some short grasses and weeds in the more open places.

Topography: Plane slope of about 6% gradient sloping northeast, in gently rolling to rolling dissected upland.

Horizon	Depth inches	Description
A_1	0-3	Very dark grayish-brown (10YR 3/2) when moist, light brownish-gray (2.5Y 6/2) when dry, very friable fine sandy loam with weakly developed fine granular structure. Roots are moderately numerous. This horizon grades into the one below.
A_2	3-8	Dark brown (10YR 4/3) when moist, very pale brown (10YR 7/3) when dry, very friable poorly developed fine granular fine sandy loam. Roots are fairly numerous. A very thin transition layer of very friable sandy clay loam or loam lies✓between this horizon and the underlying one.
B_{21}	8-15	Red (2.5YR 4/8) when moist or dry, strongly plastic clay with some fine light yellowish brown (2.5Y 6/4) mottlings. Natural breakage surfaces are slightly darker than crushed ones. Moist displaced pieces are firm but break down readily into weakly developed medium blocky aggregates which under additional pressure tend to break down into poorly developed granular structure. The material is strongly plastic when wet and very hard when dry. Some of the natural breakage surfaces have a shiny or slick appearance. This horizon grades into the underlying one.
B_{22}	15-23	Red (2.5YR 4/6) and olive (5Y 5/3) when moist or dry, strongly plastic clay. Mottlings are of medium contrast; the proportion of pale olive increases and brown decreases with increase in depth. Displaced pieces are firm when moist but break down readily into weakly developed medium and coarse blocky aggregates. The material is very hard when dry. Black concretions 1 to 2 mm. in diameter are noticeable but not numerous. This layer grades into the underlying one.
B_{31}	23-29	Olive gray (5Y 4/2) mottled with red (2.5YR 4/6 to 2.5YR 5/6) very firm massive clay. Colors are essentially the same when moist or dry. Mottlings are of low contrast. The material is strongly plastic when wet and very hard to extremely hard when dry. Dark coatings are present on some natural breakage surfaces, and a few dark concretions 1 to 2 mm. in diameter are scattered throughout the horizon. This grades into the material below.
B_{32}	29-37	Olive gray (5Y 5/2) firm massive clay finely mottled with pale yellow (5Y 7/4) and brown when moist. Colors when dry are essentially the same. The material is strongly plastic when wet and very hard when dry. Dark coatings are present along some of the natural breakage surfaces.
C	37-38 1/2	Yellowish-brown (10YR 5/6) friable silty clay loam or silty clay with fine mottlings of light gray (5Y 7/2). Colors are essentially the same whether moist or dry. Displaced pieces are friable when moist. It is essentially structureless with a tendency toward weak platiness in the lower part. This layer stands out distinctly from the materials above and below it.
C	38 1/2-54	Olive gray (5Y 5/2 when moist, 5Y 6/2 when dry) noncalcareous thinly stratified silty clays and silt loams. The partings between laminae are coated with yellow (10YR 7/6 when moist, 10YR 8/4 when dry). When in place the material is firm; when displaced it is friable and breaks out as plates 2 to 5 mm. thick.

Sampled and described by: Alexander, Martin, Shearin, Simonson, and Templin; June, 1945

PROFILE NO. 36

Boswell fine sandy loam, Henderson County, Texas.
Lab. Nos. 45571-578 (4544107-3-1 thru 8)--Average annual ppt. inches--35.53.

Depth inches	Size classes %								
	Clay	III	USDA silt	VFS	FS	MS	CS	VCS	Horizon
0- 3	10.7	11.1	31.5	36.4	19.1	1.3	0.6	0.4	A_1
3- 8	10.4	10.0	29.3	37.8	20.4	1.3	0.5	0.3	A_2
8-15	39.6	29.0	39.1	13.5	6.9	0.5	0.2	0.2	B_{21}
15-23	48.5	12.2	24.5	20.4	5.8	0.5	0.2	0.1	B_{22}
23-29	41.9	12.8	26.8	25.7	4.8	0.4	0.2	0.2	B_{31}
29-37	35.9	17.3	28.6	33.3	2.2	0.0	0.0	0.0	B_{32}
37-38.5	37.1	17.1	30.5	28.0	2.7	0.2	0.4	1.1	C
38.5-54	38.1	17.7	30.2	28.7	2.6	0.1	0.1	0.2	C

Depth inches	M.E./100 g soil						% B. sat	pH	% O.C.	P ppm
	Ca	Mg	K	Mn	H	S+				
0- 3	8.3	2.6	.6	.01	3.1	14.6	79	6.4	1.92	16.4
3- 8	1.4	1.4	.2	.06	2.9	6.0	51	5.3	.41	6.0
8-15	8.4	12.2	.4	0	14.6	35.6	59	4.9	.78	1.2
15-23	9.3	12.9	.4	0	7.9	30.5	78	5.2	.54	0.4
23-29	10.0	13.4	.4	0	3.9	27.7	86	5.9	.47	3.2
29-37	10.8	14.5	.4	0	1.0	26.7	63	7.3	.32	8.8
37-38.5	16.0	15.9	.5	0	0	32.4	100	8.0		5.2
38.5-54	13.1	17.0	.4	0	0	30.5	100	7.9		7.2

Horizon	Depth inches	Exchange capacity me/100 g	Surface M^2/g clay			% Inner surface	Kaolin %	Quartz %	Gibbsite %
			Total	Exterior	Inner				
A_2	3-8		240	85	155	20	15	25	1
B_2	8-15	90	545	210	335	45	15	5	
B_{31}	15-23	63	385	135	250	35	15	5	
B_{32}	23-29	66	440	155	285	35	20	10	
B_{32}	29-37	74					20		
C	37-38½	87	530	200	330	45	25	5	

Results of X-ray patterns of oriented samples.
3-8 Kaolin, some illite, more montmorillonite.
8-15 Kaolin, some illite, more montmorillonite.
23-29 Kaolin, some illite, more montmorillonite.
37-38 1/2 Kaolin, montmorillonite.

PROFILE NO. 37

Boswell fine sandy loam (45 La 31-1)

Location: In small forested area immediately south of gravelled road 3-3/4 miles northwest of Choudrant, Lincoln Parish, Louisiana.

Vegetation: Primarily sweetgum, hickory, winged elm, southern red oak, and white oak trees, with a scattering of short leaf and loblolly pines. There is a fairly thick undergrowth of shrubs, grasses, and weeds, including briars, sumac, oxeye daises, poison ivy, and the like.

Topography: General region is highly dissected with stream valleys lying 30 to 45 feet below the general levels of the ridge tops. The immediate site of the samples was a slope of 6 percent to the north. A short distance north of the sample site the slope becomes steeper and has a gradient of 15 to 20 percent.

Horizon	Depth inches	Description
A_0	3/4-0	Partially decomposed organic matter containing some sand grains. No plant structures are evident in the mass which, when moist, is dark brown (10YR 2/2) speckled with light colored grains of coarse sand. The lower boundary is diffuse.
A_1	0-2	Nearly loose fine sandy loam with fine poorly granular structure. The moist soil is variegated brown (10YR 5/3) to dark grayish-brown (10YR 4/2) uncrushed and becomes brown (10YR 4/3) when crushed. The dry soil is pale brown and very pale brown (10YR 6/3 and 7/3). The horizon contains a few small angular ironstone fragments and has diffuse boundaries.
A_2	2-6	Nearly loose fine sandy loam with fine, poorly granular structure. The moist soil is brown (10YR 5/3) in the upper part and strong brown (7.5YR 5/6) in the lower part. Cores and small round pockets of very dark grayish-brown (10YR 3/2) material are common in the upper part of the horizon, and a few pockets of olive (5YR 5/6) material are present in the lower part. When dry, the soil is light gray (10YR 7/2). The horizon contains numerous small angular ironstone fragments approximately 10 mm. on the long axis. The lower boundary is distinct.
B_{21}	6-15	Firm, strongly plastic clay with medium and fine moderate blocky structure. The clay is very hard when dry. Small ironstone fragments are common, especially in the upper part. When moist the soil is red (2.5YR 4/8) uncrushed and slightly lighter crushed. The color changes to red (2.5YR 4/6) as the soil dries. Boundary is diffuse.
B_{22}	15-22	Firm, strongly plastic clay with well developed blocky structure. The blocks break down under moderate pressure to fine moderate granular structure. Many blocks have glossy or slick surfaces. The horizon when moist and in place has uniformly finely mottled pattern of red (2.5YR 4/6) and pale olive (5Y 6/3) of medium to low contrast. Mottling tends to become coarse in lower part. The color of the soil when dry is the same as that when moist. Boundary of the horizon is diffuse.
B_{31}	22-32	Firm, strongly plastic and very hard clay with medium, moderately blocky structure. The structure is less distinct than that of the overlying horizon, and the blocks crush under slight pressure to fine weakly granular structure. Some blocks have glossy or slick surfaces. The color of the soil when moist in place is a uniformly mottled pale yellow (5Y 7/3) red (2.5YR 4/8) and yellowish-red (5YR 5/6). The brown colors are dominant in the upper part of the horizon, whereas the yellow is dominant in the lower part. Colors of the dry and moist soil are the same. The lower boundary of the horizon is diffuse.
B_{32}	32-48	Firm, strongly plastic and very hard clay with coarse poorly blocky structure. The moist uncrushed soil is light gray (5Y 7/2) finely mottled with yellowish-red (2.5YR 4/8) and red (2.5YR 5/6). Mottles are numerous, of high contrast, and chiefly fine, though there are some medium and coarse ones. In places the

Horizon	Depth inches	Description
		horizon has a speckled appearance. Colors do not change as the soil becomes dry.
C	48-65	Pale yellow (5Y 7/3) clay mottled with red (2.5YR 4/8). Mottlings are common, fine, and of high contrast. The clay is firm and strongly plastic and has a medium to coarse, moderate platy structure in place. The structure is due to the laminated beds of clay, apparently inherited. Midway in the horizon there is a band, about 2 inches thick, in which mottlings are numerous as compared to parts above and below it.

Sampled by: Alexander, Martin, Shearin, Simonson, Sturgis, and Templin.

Described by: Shearin and Simonson. June 22, 1945

Boswell fine sandy loam, Lincoln Parish, Louisiana.
Lab. Nos. 45627-634 (45 La 31-1-1 thru 8)--Average annual ppt. inches--49.54.

Depth inches	Size classes %								
	Clay	III	USDA silt	VFS	FS	MS	CS	VCS	Horizon
3/4-0----------------------	9.8	9.7	22.2	13.4	43.4	6.7	2.8	1.7	A_0
0- 2----------------------	4.9	7.1	19.6	15.6	48.8	5.7	1.3	4.1	A_1
2- 6----------------------	7.9	9.7	22.8	14.6	42.8	5.6	1.1	5.2	A_2
6-15----------------------	56.3	8.9	16.8	8.4	14.0	1.8	1.1	1.6	B_{21}
15-22----------------------	53.9	9.7	18.9	10.8	12.6	1.4	1.2	1.2	B_{22}
22-33----------------------	49.3	10.1	19.7	13.6	12.1	1.4	1.9	2.0	B_{31}
33-48----------------------	49.7	11.4	21.1	13.5	11.9	1.0	1.0	1.8	B_{32}
48-65----------------------	57.5	19.0	29.7	11.1	0.8	0.2	0.5	0.2	C

Depth inches	M.E./100 g soil						% B. sat	pH	% O.C.	P ppm
	Ca	Mg	K	Mn	H	S+				
3/4-0--------------										
0- 2--------------	2.8	1.3	.3	T	2.6	7.0	63	6.0	1.39	12.8
2- 6--------------	2.4	1.0	.2	.03	2.0	5.6	64	5.5	.49	5.6
6-15--------------	.8	3.2	.6	T	16.8	21.4	21	4.5	.48	1.2
15-22--------------	.3	.2	.2	T	17.6	18.3	4	4.4	.38	2.8
22-33--------------	.1	2.5	.4	T	16.6	19.6	15	4.3	.26	.8
33-48--------------	.1	2.5	.3	T	18.3	21.2	14	4.2	.25	6.4
48-65--------------	.0	4.1	.6	T	25.3	30.0	16	4.2	.30	4.8

Horizon	Depth inches	Exchange capacity m.e/100 g	Surface M^2/g			% Inner surface	Kaolin %	Quartz %	Gibbsite %
			Total	Exterior	Inner				
A_2----------------	2- 6		160	95	65	10	35	15	
B_{21}----------------	6-15	38	315	85	230	30	40	5	1
B_{31}----------------	15-22	34	220	85	135	20	40	5	
C----------------	48-65	52	335	110	245	35	30	10	

Results of X-ray patterns of oriented samples.
2-6 Kaolin, mixed layer mineral, quartz
6-15 Kaolin, mixed layer mineral, quartz
15-22 Kaolin, mixed layer mineral
48-65 Kaolin, montmorillonite with some chlorite.

PROFILE NO. 38

Boswell fine sandy loam (45 La 07-1)

Location: Wooded area along the south side of US Highway No. 80, two miles east of Gibsland, Bienville Parish, Louisiana.

Vegetation: Predominantly shortleaf pine trees with some post oak, white oak, hickory, southern red oak, and winged elm trees. There is a very sparse undercover of short grasses, weeds, and shrubs.

Topography: The land surface is a generally dissected plain in which stream valleys are notched 15 to 35 feet below the ridge crests. The immediate profile site is a slope of 3 percent to the east.

Horizon	Depth inches	Description
A_1	0-3	Very friable very fine sandy loam with fine, weakly granular structure. The soil is dark grayish-brown (10YR 4/2) when crushed moist, very dark gray (10YR 3/1) uncrushed moist, grayish-brown (2.5Y 5/2) when crushed dry. Numerous roots and a few small, angular pebbles occur in the horizon which has a diffuse lower boundary.
A_2	3-6	Very friable very fine sandy loam with fine, weakly granular structure. The soil is light yellowish-brown (10YR 6/4) when crushed moist and light gray (10YR 7/2) when crushed dry. There is a gradation in color from top to bottom of the horizon, with the lower part being yellowish-red (5YR 5/6) when moist. The moist soil is slightly darker uncrushed than crushed. The horizon has a diffuse lower boundary and contains a few small angular pebbles.
B_1	6-9	Friable clay loam with medium, poorly granular structure. The moist soil is yellowish-red (5YR 5/6) when crushed or uncrushed and is the same color dry. A few pinholes occur in the horizon which contains a few small angular pebbles and has a diffuse lower boundary.
B_{21}	9-16	Firm clay with fine and medium moderate granular structure. The soil digs out in irregular pieces that break down readily to granules. The moist soil when crushed or uncrushed is red (2.5YR 4/8) with a few fine mottlings of pale olive (5Y 6/3) of medium contrast in the lower part of the horizon. The dry soil is red (2.5YR 5/6) when crushed. Strongly plastic when wet and very hard when dry. A few dark specks or accretions less than 1 mm. in diameter and a few charcoal pieces present. Diffuse lower boundary.
B_{22}	16-25	This layer is comparable to the overlying one except that irregular pieces are bigger and the granular structure is less evident. Dark spots and streaks, probably charcoal, are common; most of them small. The color of the moist soil is red (2.5YR 4/8) with numerous fine and medium high contrast mottlings of light olive gray (5Y 6/2). The mottles become coarser toward the bottom of the horizon. When dry, the soil is red (2.5YR 5/6) mottled with light gray (5Y 7/2).
B_{31}	25-36	Firm clay which is strongly plastic when wet and very hard when dry. The soil digs out in coarse irregular pieces that break down into medium, moderate granular to blocky structure. In place the horizon is uniformly mottled gray to light olive gray (5Y 6/1 to 6/2) and red (2.5YR 4/8) when moist. The pattern of mottling is generally fine and medium in size and of high contrast. There are some coarse mottles in the horizon. When dry, the soil is light gray (5Y 7/2) with the mottles of red unchanged. A few dark specks less than 1 mm. in diameter are present.
B_{32}	36-48	Firm, massive clay which is strongly plastic and very hard. It is largely comparable to the overlying horizon but seems more firm in place. Moist soil is light gray to light olive gray (5Y 6/1 to 6/2) with numerous mottlings of red (2.5YR 4/8). The mottlings are chiefly fine and medium in size with a few coarse ones among them. All are of high contrast. When dry, the soil is light gray (5Y 7/2) with the mottles unchanged.
B_{33}	48-56	This is comparable to the overlying horizon in texture, structure, and consistence. The colors are also similar except that mottlings are coarser and the

Horizon	Depth inches	Description
		matrix color is slightly lighter. The horizon is light gray (5Y 7/2) mottled with red (2.5YR 4/8) when moist or dry.
C	56-72	Firm, massive clay which is strongly plastic and very hard and contains pockets of very fine sand. The layer when moist is light gray (5Y 7/2) mottled with yellowish-red (5YR 5/8) and reddish-yellow (7.5YR 6/8). The mottles are fine, common, and of medium contrast. There are also a few mottles of red (2.5YR 4/8) which are fine and of high contrast. When dry the soil matrix is light gray (5Y 7/2) and the mottles are chiefly brownish-yellow (10YR 6/8).

Sampled by: Alexander, Martin, Shearin, Simonson, Sturgis, and Templin.

Described by: Shearin and Simonson. June 22, 1945.

Boswell fine sandy loam, Bienville Parish, Louisiana.
Lab. Nos. 45618-626 (45 La 07-1-1 thru 9)--Average annual ptt. inches--49.86.

Depth inches	Size classes %								
	Clay	III	USDA silt	VFS	FS	MS	CS	VCS	Horizon
0- 3	9.3	19.9	52.0	24.2	8.4	1.0	2.1	3.0	A_1
3- 6	11.8	23.9	51.1	23.1	7.5	0.7	2.0	3.8	A_2
6- 9	25.3	21.4	44.5	19.3	5.6	0.5	1.4	3.4	B_1
9-16	60.6	13.4	25.2	10.8	1.9	0.1	0.4	1.1	B_{21}
16-25	64.0	13.3	24.1	8.5	1.8	0.3	0.6	0.7	B_{22}
25-36	57.6	13.6	26.5	11.4	2.7	0.3	0.7	0.8	B_{31}
36-48	55.3	12.6	26.0	15.3	2.7	0.1	0.3	0.3	B_{32}
48-56	52.5	13.0	27.1	17.1	3.0	0.1	0.1	0.1	B_{33}
56-72	51.1	11.7	25.4	22.8	0.7	0.0	0.0	0.0	C

Depth inches	M.E./100 g soil						% B. sat	pH	% O.C.	P ppm
	Ca	Mg	K	Mn	H	S+				
0- 3	4.2	1.3	.4	.04	5.2	11.1	53	5.4	1.94	8.8
3- 6	1.8	1.0	.4	.01	4.0	7.2	44	5.0	.78	4.8
6- 9	2.4	2.4	.3	T	7.4	12.5	41	4.7	.65	8.0
9-16	.9	5.4	.4	T	23.3	30.0	23	4.1	.30	2.4
16-25	1.3	5.0	.5	T	24.2	31.0	22	3.9	.42	4.4
25-36	2.4	4.2	.5	T	20.6	27.7	26	4.1	.55	1.2
36-48	5.9	6.2	.5	T	21.5	34.1	37	3.9	.21	2.4
48-56	2.4	7.4	.6	T	20.0	30.4	34	3.7	.16	2.4
56-72	3.8	9.3	.6	T	15.8	29.5	46	3.7		2.8

PROFILE NO. 39

Boswell fine sandy loam (45 Miss 38-2)

Location: Lauderdale County, Mississippi, about 15 miles west of Meridian, in cut-over forested area along U. S. Highway No. 80.

Topography: Highly dissected rolling to strongly rolling uplands. Sample collected on about 5 percent slope to south.

Vegetation: Recently cut-over mixed pine and hardwoods. Scattering of shortleaf pine at present with some white and blackjack oak and an undergrowth of red sprouts, shrubs, and grasses including broom sedge.

Horizon	Depth inches	Description
A_1	0-4	Dark grayish-brown (2.5Y 4/2), light brownish-gray (2.5Y 6/2) dry, nearly loose fine sandy loam. Upper 2 inches well matted with roots and darker than lower part. Few charcoal specks noticeable.
A_2	4-7	Pale brown to light yellowish-brown (10YR 6/3) nearly loose fine sandy loam, with some lighter and darker spots and some grayish sand coatings. It is very pale brown (10YR 7/3) when dry. Diffuse boundaries; few roots present.
A_2, B_1	7-9	Transitional layer consisting of an interfingering of horizons above and below it. The material is variegated pale brown (10YR 6/3) and yellowish-red (5YR 4/6) friable sandy clay loam in upper part and light sandy clay in lower part, with weakly developed fine and medium blocky structure. When dry, the material is very pale brown (10YR 7/3) and reddish-yellow (7.5YR 6/8).
B_{21}	9-15	Dark red (2.5YR 3/6) strongly plastic clay very finely mottled with yellowish-red (5YR 4/6) of low contrast; well developed fine and medium blocky structure. It is firm to very firm when moist, and very hard when dry. The soil is reddish-brown (2.5YR 4/4) when dry. Uncrushed moist surfaces are slightly darker than crushed; natural breakage surfaces have a shiny or slick appearance. A few roots and fine charcoal specks are present.
B_{22}	15-23	Mottled dark reddish-brown (5YR 3/6), yellowish-brown (10YR 5/6), and red (2.5YR 5/6) firm clay. Mottlings of medium contrast. When dry, the soil is red (2.5YR 4/6) mottled with light yellowish-brown (10YR 6/4) and light red (2.5YR 6/8). Fine and medium blocky structure is well developed. Strongly plastic when wet, and very hard when dry. Uncrushed surfaces are slightly darker than crushed, and natural breakage surfaces have a shiny or slick appearance. A few roots and small charcoal specks are present.
B_{31}	23-31	Mottled red (2.5YR 4/8) and yellowish-brown (10YR 5/4) strongly plastic clay with moderately developed fine and medium blocky structure. Mottles are of strong contrast. When dry the soil is mottled red (2.5YR 4/8) and light yellowish-brown (10YR 6/4). The material is slightly less plastic than overlying material. It is firm when moist, and very hard when dry. Very few fine roots are present.
B_{32}	31-38	Colors are essentially the same as in overlying material. This is firm clay with moderately developed fine and medium blocky structure. It is strongly plastic when wet and very hard when dry. Mottlings are coarse and of strong contrast.
C_1	38-49	Coarsely mottled red (2.5YR 4/8), strong brown (7.5YR 5/8), and grayish-brown to light olive brown (2.5Y 5/3) stratified friable sandy clay loam and sandy loam. Mottles are of strong contrast. Dominant breakage is vertical and weakly developed medium prismatic structure, evident in places. When dry, the soil is red 2.5YR 5/8), reddish-yellow (7.5YR 6/8), and light yellowish-brown (2.5Y 6/4).
C_2	49-63	Mottled light olive gray (5Y 5/2) red (2.5YR 4/8) and strong brown (7.5YR 5/8) friable sandy clay loam. The material when dry is mottled pale yellow (5Y 7/3), red (2.5YR 5/8) and reddish-yellow (7.5YR 6/8). Mottlings are coarse and of strong contrast. Displaced pieces break out into irregular fragments.

Mica flakes are noticeable throughout B and C horizons but seem to become more common with increasing depth.

Sampled by: Alexander, Martin, Shearin, Templin, and Vanderford; November 9, 1945.

Described by: Shearin (Moist colors identified by Martin and Templin).

Boswell fine sandy loam, Lauderdale County, Mississippi.
Lab. Nos. 46681-689 (45 Miss 38-2-1 thru 9)--Average annual ppt. inches--53.36.

Depth inches	Size classes %								
	Clay	III	USDA silt	VFS	FS	MS	CS	VCS	Horizon
0- 4--------------------	6.3	10.1	23.0	16.1	32.4	11.0	8.2	3.0	A_1
4- 7--------------------	5.5	10.5	24.4	17.5	32.8	9.5	6.9	3.4	A_2
7- 9--------------------	15.6	11.8	24.4	15.0	28.0	8.5	6.0	2.5	A_2, B_1
9-15--------------------	61.1	6.4	12.4	9.5	11.7	2.9	2.0	0.4	B_{21}
15-23--------------------	56.3	6.3	12.0	14.7	14.0	1.6	1.2	0.2	B_{22}
23-31--------------------	49.0	5.0	10.1	20.0	17.8	1.7	1.3	0.1	B_{31}
31-38--------------------	37.1	3.3	6.7	22.9	27.5	2.8	2.8	0.2	B_{32}
38-49--------------------	24.0	1.6	4.1	30.0	39.3	1.5	1.0	0.1	C_1
49-63--------------------	25.3	1.4	3.1	26.7	44.0	0.7	0.2	0.0	C_2

Depth inches	M.E./100 g soil						% B. sat	pH	% O.C.	P ppm
	Ca	Mg	K	Mn	H	S+				
0- 4------------	2.7	1.0	.2	.02	1.8	5.7	68	5.9	1.62	3.2
4- 7------------	1.3	.6	.1	0	1.3	3.3	60	5.7	.63	4.0
7- 9------------	2.3	2.6	.2	T	1.2	6.3	81	5.0	.63	4.0
9-15------------	3.6	6.9	.4	T	23.2	34.1	32	4.4	.54	2.4
15-23------------	1.5	4.6	.5	T	24.0	30.6	22	4.3		.4
23-31------------	.8	4.2	.4	T	22.8	28.1	19	4.2		1.2
31-38------------	1.2	3.0	.3	0	17.4	21.9	20	4.3		2.4
38-49------------	.1	1.9	.2	0	10.7	12.9	17	4.3		3.2
49-63------------	.1	1.9	.3	0	12.0	14.3	16	4.2		1.2

Horizon	Depth inches	Exchange capacity m.e/100 g	Surface M²/g			% Inner surface	Kaolin %	Quartz %	Gibbsite %
			Total	Exterior	Inner				
A^1.--------------	0- 4		285	106	100	15	10		2
B^2.--------------	9-15	56						25	1
B^{31}--------------	15-23	54	445	170	275	35	25	1	1
B^{32}--------------	23-31	57					25		1

Results of X-ray diffraction patterns of oriented samples.
0-4 Kaolin, 14A non-expanding mineral, some illite
15-23 Montmorillonite
23-31 Montmorillonite

PROFILE NO. 40
Boswell fine sandy loam (45 Ala 03-3)

Location: Barbour County, Alabama, 2.9 miles north of Comer.

Topography: Dissected gently rolling to rolling upland. Sample collected on 1 to 2 percent slope to north.

Vegetation: Cultivated field planted to cotton in 1945. Weeds and grasses, mainly Florida pursley and crab grass.

Horizon	Depth inches	Description
A_p	0-6	Brown (10YR 5/3) loose to nearly loose fine sandy loam. This is the plow layer. Fine roots fairly numerous. Diffuse lower boundary. The soil is very pale brown (10YR 7/3) when dry.
A_2	6-10	Light yellowish-brown (2.5Y 6/4) nearly loose to loose fine sandy loam with same variegation of lighter and darker spots. Few fine roots. When dry, the soil is pale yellow (2.5Y 8/4).
B_1	10-13	Transitional horizon of variegated yellowish-red (5YR 5/8) and yellowish-brown (10YR 5/6) friable sandy clay loam in upper part and sandy clay in lower part. Yellowish-red predominates in upper part and yellowish-brown in lower part. The soil is variegated reddish-yellow (5YR 6/8) and very pale brown (10YR 7/3) when dry.
B_{21}	13-21	Dark red (10R 3/6) firm clay with moderately developed fine and medium blocky structure. A few very fine low contrast mottlings of lighter colors are present in lower part of horizon. The soil is red (2.5YR 4/8) when dry. Uncrushed surfaces are slightly darker than crushed; natural breakage surfaces have a slick or shiny appearance. The material is strongly plastic when wet and very hard when dry. Small sand pockets along old root channels and medium sand grains are prominent. A few fine pin holes, fine roots and black specks as well as black streaks along old root channels are present.
B_{22}	21-29	Dark red (10R 3/6) mottled (medium contrast) with brownish-yellow (10YR 6/8) firm clay with moderately developed fine and medium blocky structure; strongly plastic when wet, and very hard when dry. The soil is red (2.5YR 4/8) mottled with yellow (10YR 7/6) when dry. Uncrushed surfaces are slightly darker than crushed. A few dark specks as well as streaks along old root channels are present.
B_{31}	29-41	Mottled dark red (10R 3/6) and light yellowish-brown (10YR 6/4) strongly plastic clay with moderately developed fine and medium blocky structure. This is firm when moist and very hard when dry. Higher proportion of dark red than of light yellowish-brown. When dry the soil is red (2.5YR 4/8) mottled with very pale brown to yellow (10YR 7/4 to 7/6). Uncrushed surfaces are slightly darker than crushed. A few dark streaks along old root channels are present.
B_{32}	41-51	Strongly plastic clay with weakly developed medium blocky structure. It is firm when moist and very hard when dry. The material is mottled in high contrast with the same colors as in the overlying horizon. Dark red (10R 3/6) and light yellowish-brown (10YR 6/4) are in about equal proportions.
C	51-67	Firm clay with weakly developed medium and coarse platy structure. Strongly plastic when wet and very hard when dry. The material is mottled light yellowish-brown (10YR 6/4) and dark red (10R 3/6) with light yellowish-brown predominating.

Finely divided mica flakes are common throughout the B and C horizons; but seem to increase somewhat with an increase in depth. Natural breakage surfaces in the B and C horizons have a slick or shiny appearance.

Sampled by: Alexander, Brackeen, Martin, Shearin, and Templin; November 15, 1945.

Described by: Shearin (Moist colors identified by Martin and Templin).

Boswell fine sandy loam, Barbour County, Alabama.
Lab. Nos. 46373-380 (45 Ala 03-3-1 thru 8)--Average annual ppt. inches--57.18.

Depth inches	Size classes %								
	Clay	III	USDA silt	VFS	FS	MS	CS	VCS	Horizon
0- 6	2.4	3.7	8.7	20.5	55.0	6.9	5.0	1.5	A_p
6-10	3.4	10.7	18.1	18.0	48.2	5.7	4.9	1.7	A_2
10-13	21.4	8.4	16.4	14.2	38.7	4.9	3.1	1.3	B_1
13-21	52.6	7.1	10.6	8.0	25.0	2.0	1.4	0.4	B_{21}
21-29	50.8	6.9	10.2	7.7	27.9	1.4	1.5	0.5	B_{22}
29-41	48.4	7.8	12.1	11.3	25.9	1.1	1.0	0.2	B_{31}
41-51	52.6	11.4	17.6	16.4	12.5	0.5	0.4	0.0	B_{32}
51-67	52.4	11.7	17.9	15.6	10.4	1.8	1.7	0.2	C

Depth inches	M.E./100 g soil						% B. sat	pH	% O.C.	P ppm
	Ca	Mg	K	Mn	H	S+				
0- 6	1.0	.2	.3	T+	.6	2.1	71	6.4	.40	14.8
6-10	.6	.6	.1	T+	.6	1.9	68	6.2	.18	26.4
10-13	2.7	1.2	.1	T+	4.0	8.0	50	4.9	.24	4.4
13-21	5.2	5.0	.3	T	13.7	24.2	43	4.7		3.2
21-29	2.8	3.9	.4	T	17.4	27.1	28	4.5		2.8
29-41	1.9	3.8	.4	T	21.0	27.1	23	4.5	.18	3.2
41-51	1.3	4.5	.4	T	26.9	33.1	19	4.2	.17	4.8
51-67	1.0	4.6	.5	T	28.1	34.2	18	4.1	.16	2.4

Horizon	Depth inches	Exchange capacity m.e/100 g	Surface M^2/g			% Inner surface	Kaolin %	Quartz %	Gibbsite %
			Total	Exterior	Inner				
B_1	10-13	37					25		1
B_2	13-21	46	280	80	200	30	35		0
B_{31}	21-29	56	310	80	230	30	35		0
B_{32}	29-41	56	350	80	270	35	25		0
C	51-67	64	395	80	315	40	20		0

Results of X-ray diffraction patterns of oriented samples.
13-21 Kaolin, mixed layer mineral
21-29 Kaolin, mixed layer mineral
29-41 Kaolin, mixed layer with more montmorillonite than above horizons
41-51 Kaolin, montmorillonite with some illite

PROFILE NO. 41

Boswell fine sandy loam (S45 Ala 57-1)

Location: Russell County, Alabama, 12.7 miles north of Eufaula on Highway 241, .6 mile north of Russell-Barbour County line.

Topography: Highly dissected strongly rolling to rolling upland. Sample collected on slope of about 2 percent to northeast.

Vegetation: Recently cut-over area with fair stand of young shortleaf pine and a scattering of black gum, red gum, and oak sprouts. Grasses, weeds, and shrubs including broomsedge, dog fennel, and briars.

Horizon	Depth inches	Description
A_p	0-5	Yellowish-brown (10YR 5/4) nearly loose fine sandy loam fairly well matted with small roots. About 1/2-inch layer of very dark gray (10YR 3/1) on surface. The soil is very pale brown (10YR 7/4), when dry. Pieces of charcoal are common throughout. Lower boundary wavy.
B_1	5-6	Transition layer of friable sandy clay loam; variegated yellowish-brown (10YR 5/4) and yellowish-red (5YR 4/8). It consists of an interfingering of layers above and below it. The soil is variegated yellow (10YR 7/8) and reddish-yellow (5YR 6/8) when dry.
B_{21}	6-10	Dark red (10R 3/6) firm clay with well developed fine and medium blocky structure; strongly plastic when wet and very hard when dry. Uncrushed surfaces slightly darker than crushed. Fine roots fairly numerous; dark specks are fairly numerous; and a few sand pockets are present. Also few dark streaks along old root channels.
B_{22}	10-16	Essentially similar in all respects to horizon above except a few fine mottlings of yellowish colors are present.
B_{31}	16-24	Mottled dark red (10R 3/6) and pale yellow (5Y 7/3) firm clay with well developed fine and medium blocky structure; strongly plastic when wet and very hard when dry. Mottles are of medium contrast. The soil is mottled red (2.5YR 4/8) and pale yellow (5Y 7/4 to 8/4) when dry. Uncrushed surfaces are slightly darker than crushed. A few pin holes, dark specks, and dark streaks along old root channels are present.
B_{32}	24-36	Coarsely mottled pale yellow (5Y 7/3) and red (2.5YR 4/8) firm clay with weakly developed fine and medium blocky structure. Mottles are of strong contrast. It is strongly plastic when wet and very hard when dry. When dry, the soil is pale yellow (5Y 8/3 to 8/4) mottled with red (2.5YR 4/8). Pin holes fairly numerous, fine roots few.
B_{33}	36-48	Essentially the same as layer above except there is a higher proportion of pale yellow (5Y 7/3).
C	48-63	Mottled pale yellow (5Y 7/3) and red (2.5YR 4/8) strongly plastic clay; weakly to moderately developed fine and medium blocky structure. Mottles are fine and of medium contrast.

Sampled by: Alexander, Brackeen, Martin, Shearin, and Templin; November 15, 1945.

Described by: Shearin (Moist colors identified by Martin and Templin).

Note: Finely divided mica flakes common throughout B and C horizons but seem to increase with an increase in depth. Natural breakage surfaces in B and C horizons have shiny or slick appearance.

PROFILE NO. 41

Boswell fine sandy loam, Russell County, Alabama.
Lab. Nos. 46397-404 (S45 Ala 57-1 thru 8)--Average annual ppt. inches--48.39.

Depth inches	Size classes %								
	Clay	III	USDA silt	VFS	FS	MS	CS	VCS	Horizon
0-5	4.5	5.9	13.6	51.9	28.7	0.7	0.5	0.1	Ap
5-6	20.9	8.2	15.0	39.6	23.3	0.6	0.4	0.2	B$_1$
6-10	60.2	6.7	10.4	18.3	10.9	0.1	0.1	0.0	B$_{21}$
10-16	57.3	7.3	10.9	20.6	11.1	0.1	0.0	0.0	B$_{22}$
16-24	50.3	7.9	11.5	24.0	14.0	0.1	0.1	0.0	B$_{31}$
24-36	44.3	7.8	11.4	23.4	20.7	0.1	0.1	0.0	B$_{32}$
36-48	42.6	6.6	9.5	22.1	25.6	0.1	0.1	0.0	B$_{33}$
48-63	42.0	7.0	10.4	28.7	18.4	0.4	0.1	0.0	C

Depth inches	M.E./100 g soil						% B. sat	pH	% O.C.	P ppm
	Ca	Mg	K	Mn	H	S+				
0-5	.7	.4	.1	T$^+$	2.6	3.8	32	5.0	.59	5.6
5-6	1.9	1.0	.2	T	6.3	9.4	33	4.5	.63	4.0
6-10	6.0	3.4	.4	T	18.8	28.6	34	4.4	.51	2.0
10-16	5.8	3.4	.4	T	21.3	30.9	31	4.4	.44	2.0
16-24	4.8	2.8	.4	T	22.3	30.3	26	4.4	.26	.4
24-36	5.6	2.7	.5	T	23.6	32.4	27	4.3		2.4
36-48	6.8	2.4	.4	T	23.1	32.7	29	4.1		2.0
48-63	8.3	2.1	.3	T	23.4	34.1	31	3.9		0

Horizon	Depth inches	Exchange capacity m.e/100 g	Surface M^2/g			% Inner Surface	Kaolin %	Quartz %	Gibbsite %
			Total	Exterior	Inner				
B$_1$	5-6		280	60	220	30	35		0
B$_{21}$	6-10	48	340	80	260	35			
B$_{22}$	10-16	54					30		0
B$_{31}$	16-24	60	380	80	300	40	25	5	0
B$_{32}$	24-36	73					20		0
B$_{33}$	36-48	76	550	90	460	60	20		0
C	48-63	81					20		0

Results of X-ray diffraction patterns of oriented samples.
6-10 Kaolin, 14 A spacing non-expandable.
16-24 Kaolin, montmorillonite with some illite.
36-48 Kaolin, montmorillonite.

PROFILE NO. 42

Windthorst fine sandy loam (4544184-1)

Location: Parker County, Texas; 5.2 miles southwest of Weatherford on U. S. Highway No. 80 in a cut-over forested upland area on the north side of highway. This location is in the West Cross Timbers section of north central Texas within the outcrop of the Trinity formation. The area appears to have never been cultivated.

Vegetation: Fairly thick cover of small and medium size post oak and blackjack oak with a sparse undergrowth of briars, grasses, weeds, cactus and scrubby winged elm.

Topography: Plane surface of 3% gradient, sloping west, in gently rolling upland. The general region is well dissected and the difference in elevation between the ridge tops and stream valleys probably ranges from about 15 to 50 feet.

Horizon	Depth inches	Description
A_1	0-2 1/2	Very dark grayish-brown (10YR 3/2) when moist and light yellowish-brown (10YR 6/4) when dry, very friable very fine sandy loam with weakly developed fine granular structure. Upper part is slightly darker than lower part. Roots are fairly numerous and well distributed. This horizon grades into the one below.
A_2	2 1/2-6 1/2	Brown (10YR 5/3) when moist and weak very pale brown (10YR 7/4) when dry, nearly loose essentially structureless very fine sandy loam. Roots are less numerous than in layer above. Transition layer about 1/2 inch thick between this horizon and one below is actually interfingering of the two horizons.
B_2	6 1/2-17 1/2	Yellowish-red (5YR 5/8) when moist and reddish-yellow (5YR 6/6) when dry, noncalcareous clay with moderately to weakly developed medium and coarse blocky structure. The upper part of horizon contains more sand and is less firm than the lower part. The material is firm when moist, moderately to strongly plastic when wet, and very hard when dry. Dark streaks and spots are numerous along root and worm channels and on some of the natural breakage faces. This horizon grades into the one below.
B_{31}	17 1/2-24 1/2	Strong brown (7.5YR 5/8) mottled with brownish yellow (10YR 6/8) when moist, reddish-yellow (7YR 6/6) mottled with brownish-yellow (10YR 6/8) when dry, noncalcareous clay slightly less plastic than overlying material. Displaced pieces break down into weakly developed coarse blocky structure; it is moderately plastic when wet and very hard when dry. Dark streaks and spots are common along root and worm channels and on some of the natural breakage surfaces. The mottlings are fine and of low contrast. This horizon grades into the underlying one.
B_{32}	24 1/2-29	Brown (7.5YR 5/4) mottled with yellow and gray colors when moist, brown (7.5YR 4/4) mottled with pale yellow (2.5Y 8/3) when dry, noncalcareous sandy clay. Mottlings are of low contrast. Displaced pieces break down into moderately developed coarse prismatic structure with the prisms breaking crosswise. These crush readily into a moderately developed medium and coarse blocky mass. Dark streaks along the root and worm channels are less numerous than in the overlying horizon. This material is firm when moist, moderately plastic when wet, and very hard when dry. It grades into the material below.
B_{33}	29-33 1/2	Grayish-brown (2.5Y 5/3) finely mottled with gray and brown colors when moist, pale olive (5Y 6/3) finely mottled with brown and orange colors when dry, strongly plastic noncalcareous clay with weakly developed coarse and very coarse prismatic structure. The prisms break down readily into moderately developed medium and coarse blocky aggregates. When dry this material is very hard to extremely hard; it is very firm when moist.

Horizon	Depth inches	Description
C	33 1/2-42	Pale yellow (2.5Y 8/3) finely mottled with gray and brown colors when moist, pale yellow (5Y 8/3) finely mottled with light yellowish-brown (10YR 6/4) when dry, stratified silts and silty clays. This material is friable and breaks down readily into weakly developed coarse blocky aggregates. A few dark specks are present.
C	42-46	Pale olive to olive yellow (5Y 6/5) massive calcareous clay; firm when moist, strongly plastic when wet and very hard to extremely hard when dry. The color is essentially the same when dry as when moist. Dark specks are about as numerous as in the layer above.

Sampled and described by: Alexander, Martin, Shearin, Simonson, and Templin; June, 1945.

Windthorst fine sandy loam, Parker County, Texas.
Lab. Nos. 45520-527 (4544184-1-1 thru 8)--Average annual ppt. inches--31.03.

Depth inches	Size classes %								
	Clay	III	USDA silt	VFS	FS	MS	CS	VCS	Horizon
0 - 2.5	6.5	5.5	28.3	51.9	12.8	0.3	0.2	0	A_1
2.5- 6.5	5.4	5.2	27.3	53.3	13.7	0.2	0.1	0	A_2
6.5-17.5	29.0	6.4	27.4	35.3	8.0	0.2	0.1	0	B_2
17.5-24.5	27.3	4.8	31.5	35.6	5.4	0.1	0.1	0	B_{31}
24.5-29	27.6	9.3	32.5	32.7	7.0	0.1	0.1	0	B_{32}
29 -33.5	45.8	15.4	35.7	15.7	2.7	0.0	0.1	0	B_{33}
33.5-42	17.9	9.0	47.5	31.0	3.6	0.0	0.0	0	C
42 -46	59.8	21.0	29.9	7.3	2.0	0.4	0.5	0.1	C

Depth inches	M.E./100 g soil						% B. sat	pH	% O.C.	P ppm
	Ca	Mg	K	Mn	H	S+				
0 - 2.5	4.5	1.0	.2	.02	.5	6.2	92	6.7	.90	8.0
2.5- 6.5	2.2	.5	.1	T+	.7	3.5	80	6.7	.29	5.6
6.5-17.5	11.2	3.7	.3	T+	1.5	16.7	91	7.3	.44	5.2
17.5-24.5	8.8	4.1	.2	T	1.9	15.0	88	6.8	.35	6.0
24.5-29	10.5	4.7	.0	T	1.5	16.7	91	7.4	.33	6.0
29 -33.5	17.9	8.0	.7	T	1.5	28.1	95	7.3	.45	6.0
33.5-42	6.4	2.9	.3	T+	.6	10.2	94	7.3	.13	11.2
42 -46	32.8	9.8	.8	T	.8	44.2	98	7.8	.60	2.4

PROFILE NO. 43

Windthorst fine sandy loam (4544072-1)

Location: Erath County, Texas; 7.2 miles southwest of Stephenville on the south side of US Highway No. 67 in a cut-over forested upland underlain by the Trinity formation. This location is in the West Cross Timbers section of north central Texas. It appears to have never been cultivated.

Vegetation: Moderately dense stand of immature blackjack oak and post oak with a dense undercover of poison ivy, bull briars, and other shrubs, weeds, and grasses. Weeds and grasses occur in the more open spaces. The grasses include little bluestem and various short grasses.

Topography: Plane surface of 2% gradient, sloping southeast, in gently rolling, erosional upland.

Horizon	Depth inches	Description
A_1	0-3	Very dark grayish-brown (10YR 3/2) when moist, dark grayish-brown (10YR 4/2) when dry, fine sandy loam with weakly developed fine granular structure. It is very friable when moist. Roots are fairly numerous and uniformly distributed throughout. This horizon grades into the one below.
A_2	3-15	Light yellowish-brown (10YR 6/4) when moist, very pale brown (10YR 7/3) when dry, nearly loose essentially structureless fine sandy loam. Roots are fairly numerous and uniformly distributed. A transition layer, 1/2 to 1 inch in thickness at bottom of this horizon is actually an interfingering of the two horizons, a very friable fine sandy loam to light sandy clay loam.
B_2	15-23	Yellowish-red (5YR 4/8) when moist and yellowish-red (5YR 4/6) when dry, noncalcareous light clay. Crushed surfaces are slightly less dark than uncrushed. The material has moderately developed medium and coarse blocky structure. It is very firm when moist, moderately to strongly plastic when wet, and very hard when dry. Dark streaks along root and worm channels are fairly numerous. This horizon grades into the one below.
B_{31}	23-33	Yellowish-red (5YR 4/6) when moist, yellowish-red (5YR 5/8) when dry, noncalcareous light clay. It is slightly mottled with light yellowish-brown (10YR 6/4) and reddish-yellow (7.5YR 6/6). Uncrushed surfaces are slightly darker than crushed. Displaced pieces break down into medium and coarse blocky structure. It is moderately to strongly plastic when wet, very firm when moist, and very hard when dry. A few dark streaks along worm and root channels are present. This layer grades into the one below.
B_{32}	33-40	Mottled red (2.5YR 4/8) and reddish-yellow (7.5YR 6/8) when moist; red (2.5YR 4/6) and reddish-yellow (7.5YR 6/6) when dry, noncalcareous sandy clay with thin lenses of sandy loam or loam. Mottlings are fine and of low contrast. Uncrushed surfaces are darker than when crushed. Displaced pieces break into weakly developed coarse prismatic aggregates which break down readily into a poorly developed coarse blocky mass. It is moderately plastic when wet, firm when moist, and hard when dry. This grades into the material below.
C_1	40-51	Reddish-yellow (7.5YR 6/8) mottled with red (2.5YR 5/6) and light red (2.5YR 6/8) when moist, reddish-yellow (7.5YR 6/6) mottled with red (2.5YR 4/6) when dry, noncalcareous sandy clay with the lenses and pockets of sandy loam and sandy clay loam. Mottlings are of medium size and of low to medium contrast. Displaced pieces break into weakly developed coarse prismatic aggregates which break down readily into a poorly developed fine and medium blocky mass. The material is moderately plastic when wet, friable when moist, and hard when dry. This grades into the material below.
C_2	51-62	Finely mottled light red (2.5YR 6/8) light brown, and brown stratified sandy clay or clay and sandy clay loam with little or no structure. The horizon is noncalcareous but carbonates were encountered at about this depth with an auger 75 to 100 feet to the east.

Sampled and described by: Alexander, Martin, Shearin, Simonson, and Templin; June 1945.

Windthorst fine sandy loam, Erath County,Texas.
Lab. Nos. 45540-546 (4544072-1-1 thru 7)--Average annual ppt. inches--29.86

Depth inches	Size classes %								
	Clay	III	USDA silt	VFS	FS	MS	CS	VCS	Horizon
0-3	4.4	3.9	14.0	21.5	56.6	3.2	0.3	0	A_1
3-15	3.2	3.1	9.4	21.4	62.4	3.2	0.3	0.1	A_2
15-23	35.0	2.2	6.1	15.1	41.3	2.3	0.2	0	B_2
23-33	21.0	20.6	26.2	15.1	35.8	1.8	0.1	0	B_{31}
33-40	36.3	3.4	13.4	17.4	31.4	1.4	0.1	0	B_{32}
40-51	29.7	3.8	17.4	18.4	33.0	1.4	0.1	0	C_1
51-62	21.5	5.1	20.1	17.1	39.6	1.6	0.1	0	C_2

Depth inches	M.E./100 g soil						% B. sat	pH	% O.C.	P ppm
	Ca	Mg	K	Mn	H	S+				
0-3	1.9	.6	.4	.07	2.6	5.6	54	5.6	.79	5.6
3-15	1.0	.2	.2	T+	.5	1.9	74	5.7	.16	3.2
15-23	8.4	3.7	.4	T	6.1	18.6	67	5.2	.49	0.8
23-33	9.1	4.2	.5	T	7.3	21.1	65	5.0	.41	0.4
33-40	8.9	4.2	.5	T	6.3	19.9	68	5.1	.30	2.8
40-51	8.3	3.9	.4	T	4.5	17.1	74	5.3	.15	4.4
51-62	7.0	.8	.4	.04	3.0	11.2	73	5.4	.20	2.0

Horizon	Depth inches	Exchange capacity m.e/100 g	Surface M^2/g			% Inner Sur-face	Kaolin %	Quartz %	Gibbsite %
			Total	Exterior	Inner				
A_2	3-15		170	100	70	10	15		< 1
B_{31}	23-33	55	480	230	250	35	15		1
C_2	51-62	52	550	220	330	45	10		< 1

Results of X-ray patterns of oriented samples.
23-33 Kaolin and mixed layer mineral.
51-46 Kaolin and mixed layer mineral.

PROFILE NO. 44

Stephenville fine sandy loam (4544184-2)

Location: Parker County, Texas; 4.7 miles southwest of Weatherford on the north side of US Highway No. 80. This location is in the West Cross Timbers within the outcrop of the Trinity formation. The area has not been cultivated.

Vegetation: Scrub forest of blackjack and post oak with an understory of climbers (mainly smilax and poison ivy), various shrubs, and grasses including some little bluestem. The canopy is very open and the trees at maturity have a diameter of less than 18 inches and a height of not more than 35 feet.

Topography: Plane surface of about 3% gradient, sloping east, in gently rolling upland.

Horizon	Depth inches	Description
A_1	0-4	Very dark grayish-brown (10YR 3/2) when moist, yellowish-brown (10YR 5/5) when dry, fine sandy loam; very friable when moist; breaks down readily into weakly developed very fine and fine granules. Small roots are fairly numerous. This grades into the horizon below.
A_2	4-15	Brown (7.5YR 5/4) when moist, very pale brown (10YR 7/4) when dry, nearly loose essentially structureless fine sandy loam. Roots are less numerous than in the layer above. A very thin transition layer of very friable loam forms the lower part of this horizon.
B_{21}	15-21	Yellowish-red (5YR 4/8) when moist, yellowish-red (5YR 5/6) when dry, sandy clay loam with weakly developed medium blocky structure. It is friable when moist and slightly plastic when wet. The color of uncrushed surfaces is slightly darker than that of crushed. This horizon grades into the underlying one.
B_{22}	21-32	Yellowish-red (5YR 5/8) when moist,reddish-yellow (5YR 6/8) when dry, loam or very light sandy clay loam. It is very friable when moist and breaks down easily into poorly developed medium and coarse blocky aggregates. These are very easily crushed to weakly developed fine granules. This grades into the material below.
B_3	32-47	Yellowish-red (5YR 5/6) when moist, strong brown (7.5YR 5/6) when dry, loam or heavy sandy clay loam. It is very friable when moist. Structure is about the sar as in the overlying horizon. This rests abruptly on the material below.
C	47-55	Weakly indurated noncalcareous sandstone with some hard spots. It is reddish-yellow (7.5YR 7/6) variegated or banded with yellowish-red (5YR 5/8) and other yellowish-red and yellow colors.

Sampled by: Alexander, Martin, Shearin, Simonson, and Templin; June, 1945.

Described by: Shearin and Simonson.

PROFILE NO. 44

Stephenville fine sandy loam, Parker County, Texas.
Labs. Nos. 45528-533 (4544184-2-1 thru 6)--Average annual ppt. inches--31.03.

Depth inches	Size classes %								
	Clay	III	USDA silt	VFS	FS	MS	CS	VCS	Horizon
0-4----------------------	5.3	6.0	22.8	48.9	22.6	0.3	0.1	0	A_1
4-15---------------------	7.4	5.6	21.2	49.1	22.0	0.2	0.1	0	A_2
15-21--------------------	22.0	5.6	18.9	41.3	17.5	0.2	0.1	0	B_{21}
21-32--------------------	20.6	6.8	21.7	41.4	15.9	0.2	0.1	0.1	B_{22}
32-47--------------------	19.3	6.5	10.1	52.5	18.0	0.1	0	0	B_3
47-55--------------------	13.3	0.7	1.5	28.0	57.2	0.1	0	0	C

Depth inches	M.E. 100 g soil						% B. Sat	pH	% O.C.	P ppm
	Ca	Mg	K	Mn	H	S+				
0-4---------------	2.1	.6	0	.09	2.1	4.9	57	5.8	.60	5.6
4-15--------------	1.4	.7	0	.03	1.5	3.6	58	5.7	.42	1.2
15-21-------------	4.7	2.3	.2	T	2.7	9.9	73	5.5	.31	2.4
21-32-------------	4.0	2.4	.2	.01	3.4	10.0	66	5.6	.23	3.2
32-47-------------	3.7	2.3	.2	.01	3.0	9.2	67	5.6	.21	3.2
47-55-------------	2.6	2.6	.1	T	2.0	6.2	68	5.6	.10	4.0

PROFILE NO. 45

Stephenville fine sandy loam (4544184-3)

Location: Parker County, Texas; about 7 miles west of Weatherford on U. S. Highway No. 80A and 1/2 mile south of highway in an upland area. This location is also in the West Cross Timbers section of north central Texas and within the outcrop of the Trinity formation. The area has not been cultivated.

Vegetation: This is a very thinly forested pasture. Forest species consist of blackjack and post oak. Some mature post oak are about 16 inches in diameter and 25 to 30 feet tall. Ground cover of native grasses and herbs is moderately thick.

Topography: Uniform surface of about 4% gradient, sloping east, in gently rolling upland.

Horizon	Depth Inches	Description
A_1	0-5	Very dark grayish-brown (10YR 3/2) when moist, dark grayish-brown (10YR 4/2) when dry, very friable fine sandy loam with poorly developed fine granular structure. Roots, mostly small, are fairly numerous and uniformly distributed. This grades into the horizon below.
A_2	5-15 1/2	Dark brown to brown (7.5YR 4/3) when moist, light brown (7.5YR 6/3) when dry, nearly loose fine sandy loam. Roots are less numerous than in layer above. A thin transition layer of very friable loam or heavy fine sandy loam forms lower part of this horizon.
B_{21}	15 1/2-24 1/2	Reddish-brown (5YR 4/4) when moist, yellowish-red (5YR 4/8) when dry, sandy clay loam. It is friable when moist and displaced pieces break down into weakly developed medium blocky aggregates; slightly plastic when wet and hard when dry. A few rounded pebbles are present. Uncrushed surfaces are slightly darker than crushed. This horizon grades into the one below.
B_{22}	24 1/2-36	Yellowish-red (5YR 4/8) when moist, yellowish-red (5YR 5/6) when dry, sandy clay loam somewhat more sandy than the overlying horizon. It is friable when moist and displaced pieces break down readily into poorly developed medium blocky aggregates. Uncrushed surfaces are slightly darker than when crushed. This layer also contains a small amount of rounded pebbles. It grades into the material below.
B_3	36-39	Fine sandy loam with pockets of sandy clay or clay, reddish-yellow (7.5YR 6/8) mottled with dark yellowish-red (5YR 5/8) when moist, and reddish-yellow (7.5YR 7/6) when dry; very friable when moist; little or no structure. This rests abruptly on the material below.
C	39-49	Weakly indurated banded noncalcareous sandstone. The dominant colors are strong brown (7.5YR 5/6), and yellowish-red (5YR 5/8).

Sampled by: Alexander, Martin, Shearin, Simonson, and Templin; June, 1945.

Described by: Shearin and Simonson.

Stephenville fine sandy loam, Parker County, Texas.
Lab. Nos. 45534-539--4544184-3-1 thru -6)--Average annual ppt. inches--31.03.

Depth inches	Size classes %								
	Clay	III	USDA silt	VFS	FS	MS	CS	VCS	Horizon
0-5------------------	6.3	4.2	19.5	45.1	28.8	0.2	0.1	0	A_1
5-15.5------------------	6.4	3.2	15.5	46.9	31.0	0.1	0.1	0	A_2
15.5-24.5------------------	24.7	3.4	13.7	37.1	24.1	0.2	0.1	0.1	B_{21}
24.5-36------------------	23.9	3.2	13.0	42.7	20.2	0.1	0.1	0	B_{22}
36-39------------------	21.8	2.1	11.2	61.6	5.9	0	0	0	B_3
39-49------------------	19.0	4.2	20.0	52.2	8.7	0.1	0	0	C

Depth inches	M.E./100 g soil						% B. sat	pH	% O.C.	P ppm
	Ca	Mg	K	Mn	H	S+				
0-5----------	3.6	.7	.4	.03	1.2	5.9	80	6.9	.81	6.0
5-15.5----------	1.9	.5	.4	.01	.8	3.6	88	6.6	.29	2.8
15.5-24.5----------	4.7	2.4	.5	T	4.6	12.2	62	5.3	.44	3.2
24.5-36----------	5.0	3.0	.5	T	4.0	12.5	68	5.4	.31	2.8
36-39----------	5.4	3.2	.5	T	4.0	13.1	69	5.2	.25	4.4
39-49----------	5.8	3.0	.4	T	2.7	11.9	77	5.4	.20	1.2

Horizon	Depth inches	Exchange capacity me/100 g	Surface M^2/g			% Inner Sur-face	Kaolin %	Quartz %	Gibbsite %
			Total	Exterior	Inner				
A_2---------------	5-15.5		250	135	115	15	10	30	0
B_{22}---------------	24.5-36	52	390	100	290	40	10		0
C---------------	39-49	63	670	130	490	65	10		0

Results of X-ray diffraction patterns of oriented samples.
5-15-1/2 Kaolin, mixed layer mineral.

PROFILE NO. 46

Leaf fine sandy loam (45 La 56-2)

Location: Union Parish, Louisiana; 1.6 miles southwest of Farmerville, on State Highway 44, on low terrace (20 to 25 feet above flood plain) of Bayou D'Arbonne.

Topography: Nearly level with low circular mounds. Sample collected on nearly level area.

Vegetation: Recently cut-over mixed pine and hardwoods. Principal species are red gum, swamp white oak, water oak, black gum, with a scattering of shortleaf and loblolly pine; thick undergrowth of red gum sprouts, youpon, bull briers, French mulberry and other shrubs, weeds, and briers.

Horizon	Depth inches	Description
A_{11}	0-1	Dark grayish-brown (2.5Y 4/2), grayish-brown (10YR 5/2) dry, very friable, very fine sandy loam, with well-developed fine and medium granular structure. Very fine brownish spots and streaks noticeable. Well matted with roots.
A_{12}	1-4	Mottled grayish brown (10YR 4/2) and dark brown (7.5YR 4/2), very friable very fine sandy loam with weakly developed fine granular structure. The soil when dry is dominantly light brownish-gray (10YR 6/2). Mottlings are of low contrast. Roots less numerous than above. Diffuse lower boundary.
A_2	4-8	Mottled light brownish-gray (2.5Y 6/2) and yellowish-brown (10YR 5/8) very friable, very fine sandy loam. When dry the soil is dominantly light brownish-gray (10YR 6/2). Mottles are of low contrast. Displaced pieces break into irregular coarse fragments which break under slight pressure into poorly developed fine and medium granular structure. Pinholes fairly numerous, as are fine roots.
B_1	8-16	Mottled light brownish-gray (2.5Y 6/2), yellowish-brown (10YR 5/8), and red (2.5YR 5/8) friable, silty clay loam with weakly developed fine and medium blocky structure. Mottles are of medium contrast. When dry, the soil is mottled light gray (2.5Y 7/2) and brownish-yellow (10YR 6/8). Few fine roots present; pinholes fairly numerous. Moderately plastic when wet, hard when dry.
B_{21}	16-25	Coarsely mottled light brownish-gray (2.5Y 6/2), yellowish-brown (10YR 5/8) and red (2.5YR 5/8) friable heavy clay loam or light clay with weakly developed medium and coarse blocky structure. Mottles are of medium contrast. When dry the soil is gray (5YR 6/1) brownish-yellow (10YR 6/8) and red (2.5YR 5/8). The material is moderately plastic when wet, and hard when dry. Pinholes are numerous, and few root casts are present.
B_{22}	24-40	Mottled light brownish-gray (2.5Y 6/2), yellowish-brown (10YR 5/8) and red (2.5YR 4/8) firm light silty clay with same structure as in layer above. Light brownish-gray (2.5Y 6/2) makes up about half of the mass. Mottles are of strong contrast. The soil is mottled gray (5YR 6/1), brownish-yellow (10YR 6/8), and red (2.5YR 5/8) when dry. Moderately to strongly plastic when wet, hard to very hard when dry. A few root channels coated with light brownish-gray (2.5Y 6/2) and pinholes are present. Diffuse boundary.
B_3	40-48	Colors moist and dry are same as above, but proportion of red (2.5YR 5/8) is lower. Mottlings are coarse and of strong contrast. This is a firm clay loam with pockets of silty clay and sandy loam, essentially structureless. Dead root casts coated with light brownish-gray (2.5Y 6/2) fairly numerous; few pinholes. Moderately to strongly plastic when wet. Diffuse boundary.
C	48-61	Mottled light olive gray (5Y 6/2) strong brown (7.5YR 5/8), and red (2.5YR 4/8) friable, sandy clay loam with pockets of silty clay and sandy loam; plastic. Mottlings are coarse and of strong contrast. The soil is mottled light gray (5Y 7/2), reddish-yellow (7.5YR 6/8), and red (2.5YR 4/8) when dry.

Sampled by: Alexander, Martin, Shearin, and Templin; November 3, 1945.

Described by: Shearin (Moist colors identified by Martin and Templin).

PROFILE NO. 46

Leaf fine sandy loam, Union Parish, Louisiana.
Lab. Nos. 46697-704 (45 La 56-2-1 thru 8)--Average annual ppt. inches--51.93.

Depth inches	Size classes %								
	Clay	III	USDA silt	VFS	FS	MS	CS	VCS	Horizon
0- 1	21.2	20.2	34.0	24.7	18.7	0.7	0.6	0.1	A_{11}
1- 4	16.7	20.4	35.1	27.6	20.1	0.2	0.2	0.1	A_{12}
4- 8	11.7	22.1	36.0	31.0	21.2	0.1	0.0	0.0	A_2
8-16	19.8	17.5	31.8	28.7	19.6	0.1	0.0	0.0	B_1
16-25	26.4	21.2	34.1	22.7	16.6	0.1	0.1	0.0	B_{21}
25-40	32.5	15.3	26.5	26.9	13.9	0.1	0.1	0.0	B_{22}
40-48	27.3	11.5	21.4	31.4	19.4	0.2	0.2	0.1	B_3
48-61	24.8	11.0	21.7	32.8	20.4	0.2	0.1	0.0	C

Depth inches	M.E./100 g soil						% B. sat	pH	% O.C.	P ppm
	Ca	Mg	K	Mn	H	S+				
0- 1	2.9	.5	.2	.06	1.8	5.5	67	4.9	3.42	8.0
1- 4	2.0	.4	.2	.01	1.3	3.9	17	5.1	1.83	4.4
4- 8	.7	.2	.2	T	8.0	9.1	12	4.8	.50	5.6
8-16	.1	.4	.1	T	8.2	8.8	7	4.3	.35	4.4
16-25	.1	.5	.1	0	10.8	11.5	6	4.2	.24	4.0
25-40	.2	.6	.2	T	12.6	13.6	7	4.2	.22	2.8
40-48	.2	.5	.2	T	12.6	13.5	7	4.1	.16	4.4
48-61	.2	.4	.1	T	12.4	13.1	5	4.0	.15	2.8

Horizon	Depth inches	Exchange capacity m.e.100 g	Surface M^2/g			% Inner surface	Kaolin %	Quartz %	Gibbsite %
			Total	Exterior	Inner				
A_1	0- 1		190	65	125	15	25		
A_1	1- 4		235	75	160	20	25		
B_1	8-16	44	315	110	205	30	25		
B_{22}	25-40	42	340	170	170	25	25		

Results of X-ray diffraction patterns of oriented samples.
0-1 Kaolin, mixed layer mineral.
1-4 Kaolin, mixed layer mineral containing expandable layers.
8-16 Kaolin, mixed layer mineral containing expandable layers.
25-40 Kaolin, mixed layer mineral containing expandable layers.

PROFILE NO. 47
Leaf very fine sandy loam (45 Miss 16-1)

Location: 9/10 mile southwest of Bowie River Bridge on Highway No. 49 in southeast corner of Covington, County, Mississippi, on low terrace probably 20 to 30 feet above flood plain of Bowie River.

Topography: Nearly level to very gently undulating terrace. Sample collected on nearly level site.

Vegetation: Good stand of grasses, mainly broomsedge, carpet and crab-grass, with some weeds; also a scattering of loblolly pine, 10 to 12 feet in height.

Horizon	Depth inches	Description
A_p	0-6	Dark brown (10YR 4/3) very friable very fine sandy loam with some light gray (10YR 7/1) splotches. Poorly developed fine granular structure. The soil is pale brown (10YR 6/3) when dry. Fine roots are fairly numerous, and black specks, probably charcoal, also fairly numerous.
A_2	6-10	Yellowish brown (10YR 5/4) very friable very fine sandy loam, spotted with dark brown (10YR 4/3); poorly developed fine granular structure. Dark spots are largely worm pellets. When dry the soil is pale yellow (2.5Y 8/4). Medium sand grains, small soft charcoal pieces and worm holes are noticeable. Roots less numerous than in layer above. Gradational boundary.
A_3	10-15	Yellowish brown (10YR 5/4) friable heavy silt loam, finely mottled in lower part of horizon with red (2.5YR 4/8), essentially structureless. The soil is pale yellow when dry. Few fine roots and some worm pellets present.
B_1	15-17	Brownish-yellow (10YR 6/6) friable, silty clay loam finely mottled with red (2.5YR 4/8) of low contrast; weakly developed fine and medium blocky structure. The color is dominantly yellow (10YR 8/6) when dry. Moderately plastic when wet and hard when dry. A few fine roots and a few worm holes less than 2 mm. in diameter are present.
B_2	17-27	Finely mottled light gray (10YR 7/1) and red (2.5YR 4/8) firm silty clay; moderately developed medium to coarse blocky structure; strongly plastic when wet and very hard when dry. Mottles are of medium to strong contrast. When dry, the soil is yellow (10YR 8/6) finely mottled with yellowish-red (5YR 5/8).
B_{31}	27-42	Mottled light brownish-gray (2.5Y 6/2) and brownish-yellow (10YR 6/8), firm, strongly plastic, massive clay. Very hard when dry. Mottles are of medium contrast. The soil when dry is white (2.5Y 8/2) very finely mottled with yellow (10YR 7/8). A few pin holes are present. Diffuse boundary.
B_{32}	42-52	The colors are the same as in overlying layer. The material is firm massive sandy clay; strongly plastic when wet, and very hard when dry. Diffuse boundary.
C	52-65	The colors are essentially the same as in the two layers directly above, but the proportion of brownish-yellow (10YR 6/8) is less; probably less that 10 percent of mass. The material consists of stratified sandy clay and sandy clay loam; firm to friable when moist, moderately plastic when wet, and hard when dry.

Sampled by: Martin, Shearin, and Templin; November 5, 1945.

Described by: Shearin (Moist colors identified by Martin and Templin).

Note: Profiles similar to this occur in the original Leaf area in Forrest County, Mississippi.

PROFILE NO. 47

Leaf very fine sandy loam, Covington County, Mississippi.
Lab. Nos. 46647-654 (45 Miss 16-1-1 thru 8)--Average annual ppt. inches--55.98.

Depth inches	Size classes %								
	Clay	III	USDA silt	VFS	FS	MS	CS	VCS	Horizon
0-6	5.8	20.3	40.6	19.5	23.8	7.4	2.2	0.7	A_p
6-10	14.7	39.4	55.2	11.1	13.4	3.9	1.0	0.7	A_2
10-15	17.9	40.8	55.7	10.4	11.6	3.3	0.8	0.3	A_3
15-17	23.1	38.4	51.7	9.6	11.6	3.5	0.5	0.0	B_1
17-27	37.9	32.4	42.5	7.9	8.5	2.6	0.5	0.1	B_2
27-42	30.2	19.6	32.8	14.2	17.1	5.2	0.5	0.0	B_{31}
42-52	21.8	16.6	30.3	15.9	23.6	7.7	0.7	0.0	B_{32}
52-65	19.9	19.1	35.2	8.0	21.9	7.7	6.5	0.8	C

Depth inches	M.E./100 g soil						% B. sat	pH	% O.C.	P ppm
	Ca	Mg	K	Mn	H	S+				
0-6	.8	.4	.2	.15	3.9	5.5	29	5.3	.99	6.8
6-10	1.4	1.7	.2	0	5.3	8.6	38	4.9	.52	6.0
10-15	1.1	.6	.2	.07	5.7	7.7	26	4.6	.24	4.4
15-17	1.1	.8	.2	.02	8.8	10.9	20	4.4		5.6
17-27	1.0	2.1	.2	.02	16.1	19.4	17	4.4		4.4
27-42	.1	2.5	.3	.01	14.5	17.4	17	4.5		4.8
42-52	.1	2.2	.2	T	10.4	12.9	19	4.4		5.6
52-65	.3	2.0	.2	T	9.3	11.8	21	4.2		2.4

PROFILE NO. 48
Leaf very fine sandy loam (45 Miss 18-1)

Location: Forrest County, Mississippi, 4 miles south Estabutchie, on Highway 11, on low terrace probably 30 feet above flood plain of Leaf River.

Topography: Nearly level to very gently undulating. Sample collected on nearly level area.

Vegetation: Probably never has been cultivated, but burned over repeatedly because at edge of railroad right-of-way. Broomsedge is predominating grass; some goldenrod, gall berry shrubs, and a few oak sprouts.

Horizon	Depth inches	Descriptions
A_1	0-2 1/2	Very dark gray (10YR 3/1) moist, light gray (10YR 6/1) dry, very friable very fine sandy loam, well matted with grass roots; moderately developed fine and medium granular structure. Few worm casts present. Relatively high content of organic matter.
A_{21}	2 1/2-6	Finely mottled dark grayish-brown (10YR 4/2), very dark grayish-brown (10YR 3/2), and grayish-brown (10YR 5/2) very friable very fine sandy loam, with weakly developed fine granular structure. Mottlings are of low contrast, and disappear when crushed. Roots less numerous than above; dark spots, apparently worm pellets, fairly numerous. The soil when dry is dominantly white (10YR 8/2), with spots of light brownish-gray (10YR 6/2).
A_{22}	6-10	Finely mottled light gray (10YR 6/1) and yellow (10YR 7/6) very friable very fine sandy loam with weakly developed fine and medium granular structure. Mottlings are of low contrast and disappear when crushed. When dry, the soil is white (10YR 8/2) with a few dark streaks. Dark spots, probably worm pellets, are scattered throughout. Pinholes are numerous. A few iron concretions are present.
A_3	10-15	Transitional layer of finely mottled light brownish-gray (2.5Y 6/2) and brownish-yellow (10YR 6/8) friable silt loam. When dry the soil is pale yellow (2.5Y 8/4) finely mottled with yellow (10YR 7/6). Pinholes very numerous, and iron concretions present..
B_{21}	12-18	Mottled light brownish-gray (2.5Y 6/2), red (2.5YR 4/8), and strong brown (7.5YR 5/8) very firm, strongly plastic clay; poorly developed medium prismatic structure. Mottles are of high contrast. When dry the soil is light gray (2.5Y 7/2) finely mottled with red (2.5YR 5/8) and reddish yellow (7.5YR 6/8). A few fine roots are present. The material is very hard when dry.
B_{22}	18-25	Mottled light brownish-gray (2.5Y 6/2), yellowish-brown (10YR 5/8) and yellowish-red (5YR 5/8) massive clay; very firm when moist, strongly plastic when wet, and very hard when dry. Mottles are of medium contrast. When dry the soil is light gray (2.5Y 7/2), brownish yellow (10YR 6/8), and yellowish-red (5YR 5/8). Diffuse boundary.
B_{31}	25-36	Much like overlying horizon in color, texture, structure, and consistence. The proportion of light brownish-gray (2.5Y 6/2) is higher, however, and the yellowish-red (5YR 5/8) spots are very few. Diffuse boundary.
B_{32}	36-48	Essentially the same as layer above. Few pinholes present. Diffuse boundary.
C	48-62	Mottled light brownish-gray (2.5Y 6/2) and brownish-yellow (10YR 6/8) massive, firm clay in which there are pockets of friable sandy clay or silty clay. Mottles are of medium contrast. When dry the soil is white (10YR 8/1) mottled with yellow (10YR 7/8).

Sampled by: Martin, Shearin, and Templin; November 5, 1945.

Described by: Shearin (Moist colors identified by Martin and Templin).

Note: This profile represents approximately 75 percent of the original area. ILM

Leaf very fine sandy loam, Forrest County, Mississippi.
Lab. Nos. 46655-663 (45 Miss 18-1-1 thru 9)--Average annual ppt. inches--59.08.

Depth inches	Size classes %								
	Clay	III	USDA silt	VFS	FS	MS	CS	VCS	Horizon
0-2.5	5.7	31.9	55.9	21.6	14.3	1.5	0.9	0.1	A_1
2.5-6	4.9	29.5	53.7	23.3	14.8	1.4	1.3	0.6	A_{21}
6-10	4.2	29.5	52.6	24.3	15.4	1.4	1.5	0.6	A_{22}
10-15	16.1	29.6	49.3	19.3	12.5	1.1	1.0	0.7	A_3
15-18	43.0	22.4	35.8	12.9	7.3	0.5	0.4	0.1	B_{21}
18-25	40.5	21.4	34.1	15.5	8.8	0.6	0.5	0.0	B_{22}
25-36	37.6	22.9	36.0	16.9	8.7	0.4	0.4	0.0	B_{31}
36-48	35.9	22.3	35.1	18.5	9.6	0.4	0.4	0.1	B_{32}
48-62	35.3	19.9	31.8	20.6	11.4	0.4	0.4	0.1	C

Depth inches	M.E. 100 g soil						% B sat	pH	% O.C.	P ppm
	Ca	Mg	K	Mn	H	S+				
0-2.5	1.6	.4	.4	.05	7.4	9.9	25	5.0	3.29	9.2
2.5-6	.8	.2	.2	T	3.8	5.0	24	5.1	1.00	8.0
6-10	.6	.1	.1	0	1.8	2.6	31	5.3	.27	5.6
10-15	.6	.5	.1	0	6.1	7.3	16	5.0	.17	4.8
15-18	.6	2.1	.3	T	19.2	22.2	14	4.6	.28	3.2
18-25	.1	2.1	.2	0	18.4	20.8	12	4.5		2.8
25-36	.2	2.4	.2	0	16.6	19.4	14	4.5		2.8
36-48	.2	2.7	.2	0	16.8	19.9	15	4.4		.4
48-62	.2	2.8	.2	0	14.2	17.4	18	4.3		.8

Horizon	Depth inches	Exchange capacity m.e/100 g	Surface M^2/g			% Inner surface	Kaolin %	Quartz %	Gibbsite %
			Total	Exterior	Inner				
A_{22}	10-15	45	200	60	140	30	25	25	0
B_{22}	25-36	55	320	20	300	40	25	10	0

Results of X-ray diffraction patterns of oriented samples.
10-15 Kaolin, mixed layer mineral containing numerous expandable layers.
25-36 Kaolin, montmorillonite.

PROFILE NO. 49

Leaf fine sandy loam (45 Ala 03-2)

Location: Barbour County, Alabama, 21.2 miles northwest of Eufaula, on Highway No. 6, on low terrace 20 to 25 feet above the flood plain of Cowikee Creek.

Topography: Nearly level to very gently undulating except at terrace margins. Sample collected on nearly level area.

Vegetation: Good stand of broomsedge and weeds; small amount of carpet grass. Area has been cultivated.

Horizon	Depth inches	Description
A_p	0-5	Nearly loose fine sandy loam that is dark grayish brown to olive brown (2.5Y 4/3), finely mottled with grayish and yellowish colors of low contrast; well matted with roots. Worm holes 2 to 3 mm. in diameter are fairly numerous. The soil is light yellowish-brown (10YR 6/4) when dry. Clear boundary.
B_{21}	5-10	Finely mottled grayish-brown to light olive brown (2.5Y 5/3), red (2.5YR 4/8) and yellowish-brown (10YR 5/8) strongly plastic clay with well developed fine and medium blocky structure. It is firm when moist and very hard when dry. Fine roots are fairly numerous. The soil is mottled light yellowish-brown (2.5Y 6/4) and red (2.5YR 5/8) when dry.
B_{22}	10-16	Mottled gray (5Y 5/1), red (2.5YR 4/8) and yellowish-brown (10YR 5/8) strongly plastic clay with well developed fine and medium blocky structure. It is firm when moist and very hard when dry. A few fine roots and a few fine pin holes are present. The soil is mottled light olive-gray (5Y 6/2) and red (2.5YR 5/8) when dry. Mottling is of strong contrast when moist.
B_{31}	16-26	Mottled gray (5Y 6/1), red (2.5YR 4/8) and yellowish-brown (10YR 5/8) firm clay with moderately developed fine and medium blocky structure. It is strongly plastic when wet and very hard when dry. When dry the soil is light olive-gray (5Y 6/2) mottled with yellowish-red (5YR 5/8). Mottling is of strong contrast when moist. A few fine roots and pinholes are present.
B_{32}	26-38	Essentially similar to overlying horizon. Diffuse boundary.
B_{33}	38-48	Color and texture same as those of overlying horizon. Poorly developed medium prismatic structure. Few fine roots and pinholes present.
C	48-60	Color and texture like that of overlying horizon but this is massive and essentially structureless. No roots present; few fine pinholes.

Sampled by: Alexander, Brackeen, Martin, Shearin, and Templin; November 14, 1945.

Described by: Shearin (Moist colors identified by Templin).

PROFILE NO. 49

Leaf fine sandy loam, Barbour County, Alabama.
Lab. Nos. 46366-372 (45 Ala 03-2-1 thru 7)--Average annual ppt. inches--57.18.

Depth inches	Size classes %								
	Clay	III	UDSA silt	VFS	FS	MS	CS	VCS	Horizon
0- 5	9.4	7.9	16.1	26.5	38.2	5.5	3.5	0.8	Ap
5-10	38.0	11.0	16.3	15.4	23.0	4.1	2.8	0.4	B_{21}
10-16	36.2	13.6	19.3	15.9	22.2	3.8	2.5	0.1	B_{22}
16-26	36.7	11.6	17.5	16.2	22.9	3.8	2.6	0.3	B_{31}
26-38	37.9	10.7	18.1	16.0	20.8	3.8	3.0	0.4	B_{32}
38-48	41.3	10.4	17.7	15.5	19.1	3.4	2.5	0.5	B_{33}
48-60	41.5	10.3	18.0	16.5	19.2	2.9	1.7	0.2	C

Depth inches	M.E./100 g soil						% B. sat	pH	% O.C.	P ppm
	Ca	Mg	K	Mn	H	S+				
0- 5	1.1	.3	0	.03	2.5	3.9	36	4.7	.83	5.6
5-10	2.2	.8	.1	.02	15.8	18.9	16	4.4	.55	4.4
10-16	4.1	1.4	.2	0	17.2	22.9	25	4.4	.27	0.8
16-26	3.4	.9	.2	T	16.6	21.1	21	4.4	.21	2.4
26-38	5.4	1.2	.3	T	17.9	24.8	28	4.2		1.2
38-48	8.4	1.3	.2	T	19.8	29.7	33	4.2		4.0
48-60	12.3	1.5	.2	T	17.2	31.2	44	4.0		4.4

Horizon	Depth inches	Exchange capacity m.e/100 g	Surface M^2/g			% Inner surface	Kaolin %	Quartz %	Gibbsite %
			Total	Exterior	Inner				
B_{22}	10-16	63	385	100	285	40	15		0
B_{31}	16-26	57					15		0
B_{32}	26-38	65	430	125	305	40	15		0
C	48-60	75	490	100	390	55	15		0

Results of x-ray diffraction patterns of oriented samples.
16-26 Kaolin and montmorillonite
48-60 Kaolin and montmorillonite

PROFILE NO. 50

Leaf sandy loam (45 Ala 34-1)

Location: Henry County, Alabama; on low smooth stream terrace along graded road 2.1 miles from Highway No. 10 about 2.4 miles northwest of Chattahoochee River Bridge.

Topography: Nearly level to very gently undulating. Nearly level where sample was collected.

Vegetation: Idle field that has not been cultivated for several years. Good stand of broomsedge with some carpet grass, needle grass, and weeds. Also a scattering of red gum, black gum, oak, and pine sprouts.

Horizon	Depth inches	Description
A_p	0-5	Yellowish-brown (10YR 5/4) nearly loose sandy loam that is essentially structureless; pale yellow (2.5Y 7/4) when dry. There is a mat of grass roots in upper inch, and fewer but many roots in lower part. Some variegations in color because of white sand coatings and brownish spots. Wavy lower boundary.
B_1	5-11	Transitional layer of mottled brownish-yellow (10YR 6/6) and pale yellow (2.5Y 7/4) friable, sandy clay loam. Mottles are of medium contrast. It is mottled yellow (10YR 7/6) and pale yellow (2.5Y 8/4) when dry. Displaced pieces break down into weak fine blocky structure. Slightly plastic when wet. Few fine roots and many pinholes present.
B_{21}	11-17	Strongly plastic light clay with moderately developed medium and coarse blocky structure; coarsely mottled with light yellowish-brown (2.5Y 6/4), red (2.5YR 5/6) and brownish-yellow (10YR 6/6) of high contrast. Firm when moist and very hard when dry. Few fine roots present; pinholes numerous; few larger holes (2 mm. in diameter). The soil is mottled pale yellow (2.5Y 8/4), red (2.5YR 5/8) and yellow (10YR 7/8) when dry.
B_{22}	17-24	Firm light clay to sandy clay with moderately developed medium and coarse blocky structure; coarsely mottled light brownish-gray to light yellowish-brown (2.5Y 6/3), red (2.5YR 5/6), and brownish-yellow (10YR 6/6) of high contrast. Brownish-yellow spots become lighter when crushed. Light brownish-gray to light yellowish-brown (2.5Y 6/3) are predominant colors. The material when dry is mottled white (2.5Y 8/2) light red (2.5YR 6/8) and yellow (10YR 7/8). It is strongly plastic when wet and very hard when dry. Few fine roots; many pinholes; few channels as large as 2-3 mm. in diameter.
B_{31}	24-32	Brittle, light sandy clay or sandy clay loam coarsely mottled with the same colors and degree of contrast as the overlying horizon, except that proportion of red (2.5Y 5/6) is higher and that of light brownish-gray to light yellowish-brown (2.5Y 6/3) is lower. Displaced pieces break down into poorly developed medium and coarse blocky structure. Plastic when wet and very hard when dry. Light brownish-gray to light yellowish-brown (2.5Y 6/3) parts are strongly plastic clay and remainder is largely sandy clay loam. Pinholes are numerous; few fine roots are present. Diffuse boundary.
B_{32}	32-41	Essentially the same as the overlying horizon. Diffuse boundary.
B_{33}	41-47	Slightly cemented, brittle, sandy clay loam with pockets or tubes of clay; essentially structureless; mottled brownish-yellow (10YR 6/8) and light brownish-gray to light yellowish-brown (2.5Y 6/3) which on drying becomes mottled yellow (10YR 7/6) and white (2.5Y 8/2). Slightly to moderately plastic when wet and hard when dry.
C	47-58	Slightly cemented brittle sandy clay loam with small pockets or tubes of sandy clay or clay; hard when dry. Mottled pattern with the same colors as the overlying horizon but proportion of brownish-yellow (10YR 6/8) is slightly higher.

Sampled by: Alexander, Brackeen, Martin, Shearin and Templin; November 13, 1945.

Described by: Shearin (Moist colors identified by Templin).

PROFILE NO. 50

Leaf sandy loam, Henry County, Alabama.
Lab. Nos. 46381-388 (45 Ala 34-1-1 thru 8)--Average annual ppt. inches--53.81.

Depth inches	Size classes %								
	Clay	III	USDA silt	VFS	FS	MS	CS	VCS	Horizon
0- 5	6.3	12.9	26.4	13.6	23.5	10.4	13.2	6.6	Ap
5-11	25.0	21.4	33.0	9.4	14.2	6.3	8.4	3.7	B_1
11-17	33.0	21.3	31.8	8.2	11.5	5.4	7.0	3.1	B_{21}
17-24	38.3	21.7	29.1	7.1	12.3	5.5	5.9	1.8	B_{22}
24-32	27.8	10.4	15.7	8.5	22.7	8.9	11.1	5.3	B_{31}
32-41	26.4	9.9	15.4	9.1	24.6	9.4	10.7	4.4	B_{32}
41-47	24.1	7.3	12.6	10.0	28.6	10.5	10.5	3.7	B_{33}
47-58	22.7	7.0	12.2	9.5	28.4	10.9	11.6	4.7	C

Depth inches	M.E./100 g soil						% B. sat	pH	% O.C.	P ppm
	Ca	Mg	K	Mn	H	S+				
0- 5	.4	.4	.1	.01	2.6	3.5	26	4.9	.50	2.4
5-11	.8	1.6	.2	T+	6.6	9.2	28	4.5	.33	5.2
11-17	.6	2.5	.2	T+	8.8	12.1	27	4.6	.29	16.4
17-24	.3	3.2	.2	T+	9.5	13.2	28	4.6	.27	4.8
24-32	.1	2.0	.2	T+	7.6	9.9	23	4.5	.17	2.8
32-41	.1	1.6	.2	T+	7.7	9.6	20	4.4	.14	6.8
41-47	.1	1.2	.1	T+	6.6	8.0	18	4.4		5.6
47-58	.1	1.0	T	T+	5.8	6.9	16	4.4		4.8

Horizon	Depth inches	Exchange capacity m.e/100 g	Surface M^2/g			% Inner surface	Kaolin %	Quartz %	Gibbsite %
			Total	Exterior	Inner				
B_{21}	11-17	37	120	85	35	5	35		1
B_{22}	17-24	34					40		1
B_{31}	24-32	35	190	40	150	20			
B_{32}	32-41	35	200	75	125	15			
B_{33}	41-47	33					30		1
C	47-58	30	190	70	120	15			

PROFILE NO. 51

Leaf fine sandy loam (S47 Ga 82-1)

Location: On stream terrace approximately 200 feet above sea level, one-half mile east of Deep Creek Church, Jenkins County, Georgia.

Vegetation: Mixed pine and hardwood forest consisting of slash pine, longleaf pine, post oak, water oak, blackgum, and sweetgum.

Topography and Drainage: Nearly level but with a few scattered low mounds; gradient less than 1 percent. Surface drainage slow and internal drainage slow to very slow. Water stands in depressions during wet seasons.

Horizon	Depth inches	Description
A_{11}	0-1	Gray (10YR 5/1), dry, fine sandy loam; essentially structureless.
A_2	1-5	Light gray to gray (10YR 6/1), dry, grayish brown (10YR 5/2), moist, nearly loose fine sandy loam with poorly developed medium to fine granular structure. Numerous root channels. Gradational boundary.
A_3	5-7 1/2	Friable fine sandy loam which is grayish brown (10YR 5/2) mottled with brownish yellow (10YR 6/8) when moist and light grayish brown (10YR 6/2) mottled with yellow (10YR 7/8) when dry. Mottlings disappear when soil is crushed. Poorly developed medium to coarse blocky structure; aggregates breaking down into fine granules. Numerous fine roots and occasional worm casts.
B_1	7 1/2-12	Firm sandy loam which is pale yellow (5Y 7/3) mottled with yellow (10YR 7/8) and reddish-yellow (5YR 6/8) when moist and light gray (5Y 7/1) mottled with pale yellow (5Y 8/4) and reddish-yellow (7.5YR 6/8) when dry. Seemingly weakly cemented, the horizon has well developed coarse blocky structure which breaks down to fine granules. Occasional gray (10YR 5/1) pockets are similar in texture to remainder of horizon.
B_{21}	12-14 1/2	Mottled brownish-yellow (10YR 6/8) gray (5Y 6/1) and red (10R 4/8) firm silty clay with moderately developed medium to coarse blocky structure. Colors given are for moist soil and proportion of red mottlings is small. Blocky aggregates break down under pressure to medium and fine granules.
B_{22}	14 1/2-23	Light gray (10YR 7/1) silty clay mottled with dark red (10R 3/6) and brownish-yellow (10YR 6/8) with well developed medium to coarse blocky structure. Aggregates break down into medium and coarse granules. Moderately plastic when wet and hard when dry. Upon drying, the mass is light gray (10YR 7/1) mottled with red (2.5Y 5/8) and strong brown (7.5YR 5/8).
B_3	23-32	Comparable to overlying horizon except that structure is less distinct and the pattern of mottling is more conspicuous.
D	32-47	Light gray (10YR 7/1) silty clay distinctly mottled with brownish-yellow (10YR 6/8) and dark red (10R 3/6) when moist. This has weak medium to coarse blocky structure which crushes to fine granules. Strongly plastic when wet. Root channels and worm burrows are common as well as very small lenses and pockets of fine sand.

Sampled and described by: Dyal, Hasty, Humbert, and Martin; July 9, 1947.

PROFILE NO. 51

Leaf fine sandy loam, Jenkins County, Georgia
Lab. Nos. 47907-914 (S47 Ga 82-1-1 thru 1-8)--Average annual ppt. inches--44.72.

Depth inches	Size classes %								
	Clay	III	USDA slit	VFS	FS	MS	CS	VCS	Horizon
0-1	9.1	13.8	25.7	12.8	27.7	11.5	10.9	2.3	A_{11}
1-5	7.7	10.0	20.8	13.8	27.6	12.1	14.0	4.0	A_2
5-7.5	8.2	9.2	19.6	13.6	27.9	11.7	14.6	4.4	A_3
7.5-12	17.3	10.2	20.3	13.0	22.6	9.7	13.5	3.6	B_1
12-14.5	30.5	9.5	18.1	10.6	17.1	7.7	11.2	4.8	B_{21}
14.5-23	36.6	10.2	19.7	12.5	18.2	5.4	6.2	1.4	B_{22}
23-32	38.0	11.0	20.2	9.3	19.6	6.0	5.9	1.0	B_3
32-47	48.1	9.8	16.6	8.9	17.3	4.3	4.0	0.8	D

Depth inches	M.E./100 g soil						% B. sat	pH	% O.C.	P ppm
	Ca	Mg	K	Mn	H	S+				
0-1	2.7	1.3	.1	.13	9.9	14.0	29	5.1		
1-5	.4	.4	.1	T	5.0	5.9	15	4.9		
5-7.5	.2	.2	.1	.02	3.8	4.2	9	5.0		
7.5-12	.1	.3	T	T	4.6	5.0	8	4.7		
12-14.5	.1	.4	.1	T	8.4	9.0	8	4.5		
14.5-23	.1	.6	.1	T	10.1	10.9	7	4.5		
23-32	.1	.8	.1	T	10.3	11.3	9	4.6		
32-47	.1	.6	.1	.01	12.6	13.4	6	4.6		

Horizon	Depth inches	Exchange capacity m.e/100 g	Surface M^2/g			% Inner surface	Kaolin %	Quartz %	Gibbsite %
			Total	Exterior	Inner				
A_2	1-5						40		0
B_1	7.5-12	29					50		0
B_{21}	12-14.5	30	180	110	70	10	50	5	0
B_{22}	14.5-23	30					50		0
B_3	32-47	28	195	110	85	10	60		0

Results of X-ray diffraction patterns of oriented samples.
12-14 Kaolin, small amount 14A non-expandable mineral.
32-47 Kaolin, mixed layer mineral with expandable layers.

PROFILE NO. 52

Leaf fine sandy loam (S47 SC 45-2)

Location: On stream terrace approximately 40 feet above sea level 7 miles south of Trio, Williamsburg County, South Carolina.

Vegetation: Mixed pine and hardwood forest consisting of loblolly pine, scarlet oak, sweetgum, ash, hickory, myrtle, and maple with much underbrush.

Topography and Vegetation: Nearly level area with slope of less than 2 percent; surface drainage slow and internal drainage very slow.

Horizon	Depth inches	Description
A_{11}	0-1	Dark grayish-brown (10YR 4/2) friable fine sandy loam with weakly developed fine granular structure. This contains much organic matter and many fine roots.
A_{12}	1-4 1/2	Dark grayish-brown (10YR 4/2) friable fine sandy loam with weakly developed fine granular structure. Numerous fine roots and few worm casts present. Gradational boundary.
A_2	4 1/2-8	Yellowish-brown (10YR 5/4) light sandy clay loam slightly flecked with gray; essentially structureless, hard when dry, firm when moist, and slightly plastic when wet. Numerous pores, roots, and worm casts.
$A_3 + B_1$	8-11	Upper part of this layer is pale yellow (5Y 7/3) essentially structureless sandy clay loam which grades into a yellowish-brown (10YR 5/8) layer slightly mottled with red (2.5YR 4/6) and having a poorly developed medium to fine blocky structure. Gradational boundary.
B_{21}	11-16 1/2	Mottled reddish-yellow (5YR 6/6) red (10R 4/8) and light gray (5Y 7/2) very firm clay with poorly developed medium to fine blocky structure. Very hard when dry, very firm when moist and moderately plastic when wet. Numerous fine roots, and some very small pockets of sand.
B_{22}	16 1/2-22 1/2	Strongly mottled dark red (10R 3/6) brownish-yellow (10YR 6/6) and light olive gray (5Y 6/2) clay with well developed medium to coarse blocky structure. Very hard when dry, very firm when moist and very plastic when wet. A few fine roots are present.
B_{31}	22 1/2-34 1/2	Mottled dark red (10R 3/6) pale yellow (5Y 7/4) and brownish yellow (10YR 6/8) clay with moderately developed medium blocky structure. Proportions of brownish yellow are small. Very hard when dry, very firm when moist, and very plastic when wet. A few fine roots present.
B_{32}	34 1/2-43	Mottled pale yellow (5Y 7/3) red (10R 4/6) and gray (6/0). Silty clay or clay with poorly developed fine and medium blocky structure. Gray is less important among the three main colors. Plastic when wet, hard when dry.
B_{33}	43-51	Pale yellow (5Y 7/3) silty clay mottled with light gray to gray (6/0) and red (10R 4/6) and having well developed medium blocky structure. Plastic when wet, hard when dry.
D_1	51-57	Light gray (5Y 7/2) heavy sandy clay mottled with brownish yellow (10YR 6/8) red (2.5YR 4/6) and having poorly developed medium to coarse blocky structure. Hard when dry, moderately plastic when wet. Few root channels present, and many pockets of sand and pockets of clay.
D_2	57-60	Mottled brownish yellow (10YR 6/8) and light gray (5Y 7/2) sandy clay in which the sands seem to be coarse. Massive in place, this digs out in irregular blocks which are easily crushed.

Sampled and described by: Dyal, Hasty, Humbert, and Martin; July 14, 1947.

PROFILE NO. 52

Leaf fine sandy loam, Williamsburg County, South Carolina.
Lab. Nos. 47923-933 (S47SC47-2-1 thru-11)--Average annual ppt. inches--46.44.

Depth inches	Size classes %								
	Clay	III	USDA silt	VFS	FS	MS	CS	VCS	Horizon
0- 1	8.5	10.9	29.1	15.6	27.0	7.3	9.4	3.1	A_{11}
1- 4	9.9	12.4	30.6	14.3	25.0	7.3	9.6	3.3	A_{12}
4- 8	11.1	16.1	33.7	13.3	21.6	6.6	9.0	4.7	A_2
8-11	19.0	15.6	32.9	11.2	19.6	5.6	7.8	3.9	A_3 & B_1
11-16.5	45.7	11.1	29.0	5.2	11.8	3.4	3.6	1.3	B_{21}
16.5-22.5	58.5	7.7	9.9	8.9	13.7	4.3	4.0	0.7	B_{22}
22.5-34.5	48.6	9.5	18.9	7.8	13.9	4.0	4.9	1.9	B_{31}
34.5-43	49.0	16.8	29.7	10.7	6.7	2.0	1.6	0.3	B_{32}
43-51	45.4	14.0	32.0	11.4	5.2	2.4	3.2	0.4	B_{33}
51-57	26.5	6.2	9.3	1.7	7.0	17.8	31.2	6.5	D_1
57-60	27.0	5.8	7.2	0.8	12.0	14.8	29.5	8.7	D_2

Depth inches	M.E./100 g soil						% B. sat	pH	% O.C.	P ppm
	Ca	Mg	K	Mn	H	S+				
0- 1	1.1	.1	.3	T	5.5	7.0	21	5.2		
1- 4	1.1	.1	.3	T	4.6	6.1	25	5.3		
4- 8	1.3	.1	.2	0	2.1	3.7	43	5.7		
8-11	2.7	.2	.2	T	2.1	5.2	60	5.6		
11-16.5	5.2	.1	.1	0	8.2	13.6	40	4.9		
16.5-22.5	5.0	.2	.2	0	13.2	18.6	29	4.7		
22.5-34.5	4.8	.2	.1	0	16.3	21.4	24	4.5		
34.5-43	7.4	1.0	.2	0	23.5	32.1	27	4.3		
43-51	7.2	.9	.2	T	21.6	39.9	46	4.1		
51-57	4.2	.5	.2	T	10.9	15.8	41	4.4		
57-60	4.0	.4	.1	T	10.3	14.8	40	4.5		

Horizon	Depth inches	Exchange capacity m.e/100 g	Surface M^2/g			% Inner surface	Kaolin %	Quartz %	Gibbsite %
			Total	Exterior	Inner				
A_1	1- 4						35		0
A_3,B_1	8-11	27					50		0
B_{22}	16-22	32	200	115	85	10	55	1	0
B_{31}	22-34	43					50		0
B_3	43-51	88					30		0
D_{22}	57-60	55	400	110	290	40	30		0

Results of X-ray diffraction patterns of oriented samples.
16-22 Kaolin, very little else.
57-60 Kaolin, mixed layer mineral with considerable expandable layers.

PROFILE NO. 53

Axtell fine sandy loam (45 44155-1)

Location: McLennan County, northeast of Waco, Texas; 0.6 mile south of Highway No. 84 and 7.8 miles east of its junction with Highway 6. Sample collected in small cut-over virgin area west of graded road. This location is on a high alluvial terrace (middle terrace) probably 50 to 100 feet above floodplain of the Brazos River.

Vegetation: Moderately dense stand of medium size post and blackjack oak with a very sparse undercover of shrubs, weeds and grasses. The owner says the area never has been plowed.

Topography: Nearly level area of less than 1 percent gradient on a smoothly dissected very high olf fluviatile plain or stream terrace, the remnants of which occupy the drainage divides and comprise the highest elevations in the vicinity.

Horizon	Depth inches	Description
A_1	0-3	Dark grayish-brown (10YR 4/2) moist, grayish-brown (10YR 5/2), dry, fine sandy loam with poorly developed fine and medium granular structure. Very friable when moist. Contains a few small rounded pebbles. Gradational boundary.
A_2	3-6	Pale brown (10YR 6/3), moist, light gray (10YR 7/2), dry, friable fine sandy loam with poorly developed fine and medium granular structure. Small rounded pebbles are more numerous than in overlying horizon. Distinct boundary.
B_{21}	6-11	Dense noncalcareous clay which is mottled red (2.5YR 4/8), olive-gray (5Y 5/2) and dark yellowish-brown (10YR 4/4) when moist; mottled reddish-brown (2.5YR 4/4), light olive gray (5Y 6/2) and brown (10YR 5/3) when dry. Moist displaced pieces break down into a weakly developed medium and coarse blocky mass. Extremely firm when moist, strongly plastic when wet, and extremely hard when dry. Dark spots or streaks are common on the natural breakage surfaces and along some root channels. Gradational boundary.
B_{22}	11-17 1/2	Mottled red (2.5YR 4/8), brown and gray colors, moist, mottled reddish-brown (5YR 4/4) and dark yellowish-brown (10YR 4/4), dry, dense noncalcareous clay with weakly developed medium and coarse blocky structure. Extremely firm when moist, strongly plastic when wet, and extremely hard when dry. Dark spots and streaks are present on some of the natural breakage faces and along some root channels but are less numerous than in the overlying horizon. Gradational boundary.
B_{31}	17 1/2-22	Dark grayish-brown (2.5Y 4/2) dense noncalcareous clay mottled with strong brown (7.5YR 5/6) and various shades of gray; poorly developed coarse blocky structure. Colors are essentially the same when moist as when dry. Extremely firm when moist, extremely hard when dry, and strongly plastic when wet. A few lime concretions are present. Gradational boundary.
B_{32}	22-27	Dense calcareous clay with color pattern essentially the same as in overlying horizon. Small lime concretions are moderately numerous. When moist, displaced pieces break down into poorly developed coarse blocky aggregates. This material is extremely hard when dry, extremely firm when moist, and strongly plastic when wet. Gradational boundary.
C	27-39	Grayish-brown (2.5Y 5/2) massive clay mottled with strong brown (7.5YR 5/8); more highly calcareous than the overlying material. Colors are essentially the same when moist as when dry. Firm to very firm when moist; and moderately to strongly plastic when wet. Gradational boundary.
C	39-51	Pale olive (5Y 6/3) mottled with reddish-yellow (5YR 7/6), moist; light gray (2.5Y 7/2) mottled with reddish-yellow (7.5YR 6/8), dry, stratified clays, sandy clays, and sandy loams. Firm when moist; this is less calcareous than the overlying material.

Sampled and described by: Alexander, Martin, Shearin, Simonson and Templin; June, 1945.

PROFILE NO. 53

Axtell fine sandy loam, McLennan County, Texas.
Lab. Nos. 45547-554 (4544155-1-1 thru 8)--Average annual ppt. inches--33.41.

Depth inches	Size classes %								
	Clay	III	USDA silt	VFS	FS	MS	CS	VCS	Horizon
0- 3	5.9	7.4	24.2	33.5	33.0	1.6	1.2	0.6	A_1
3- 6	7.9	3.8	23.7	31.4	32.9	1.7	1.6	0.8	A_2
6-11	40.5	7.8	15.4	21.5	20.6	0.9	0.7	0.4	B_{21}
11-17.5	37.3	8.7	16.4	22.7	21.5	0.9	0.7	0.5	B_{22}
17.5-22	33.2	9.6	18.4	23.7	23.0	0.8	0.7	0.2	B_{31}
22-27	32.1	9.7	22.1	22.1	22.0	0.8	0.7	0.2	B_{32}
27-39	29.1	8.8	21.5	24.5	23.2	0.7	0.6	0.4	C
39-51	27.7	9.2	23.2	25.2	22.8	0.5	0.2	0.4	C

Depth inches	M.E./100 g soil						% B. sat	pH	% O.C.	P ppm
	Ca	Mg	K	Mn	H	S+				
0- 3	4.4	3.3	.3	T	1.7	9.7	82	6.1	.54	10.0
3- 6	1.6	.8	.2	T	3.1	5.7	46	4.8	.52	7.2
6-11	16.3	4.9	.5	T	6.4	28.1	77	5.0	.55	6.0
11-17.5	18.1	5.6	.4	T	2.6	26.7	90	6.8	.37	6.0
17.5-22	16.9	4.9	.4	T	1.6	23.8	93	7.3		6.0
22-27	16.5	4.7	.5	T	.8	22.5	96	7.7		10.8
27-39	19.9	4.8	.5	T	0	25.2	100	8.0		10.0
39-51	14.8	4.7	.4	T	.1	20.0	95	8.0		25.6

Horizon	Depth inches	Exchange capacity m.e/100 g	Surface M^2/g			% Inner surface	Kaolin %	Quartz %	Gibbsite %
			Total	Exterior	Inner				
A_2	3- 6						10		0
B_{31}	17$\frac{1}{2}$-22	72	460	155	305	40	10		0
C	27-39	86	455	130	325	45	15	15	0

PROFILE NO. 54

Axtell fine sandy loam (45 44155-2)

Location: McLennan County, Texas; northeast of Waco and 0.6 mile north of Highway No. 84 and 3.1 miles east of its junction with Highway 6. This location is in a thinly forested virgin pasture area on a high alluvial terrace probably 50 to 100 feet above the floodplain of the Brazos River.

Vegetation: Forest species are mainly blackjack and post oak with a sparse undercover of shrubs, grasses and herbs in the more open places.

Topography: Nearly level surface of about 1 percent gradient at the southern edge of the level undissected part of a high stream terrace.

Horizon	Depth inches	Description
A_1	0-5	Pale brown (10YR 6/3), moist, and light brownish-gray (10YR 6/2) dry, very friable to nearly loose fine sandy loam with poorly developed fine granular structure. Contains a small amount of small rounded pebbles. Roots are fairly numerous. Gradational boundary.
A_2	5-11	Light yellowish-brown (10YR 6/4), moist, and pale brown (10YR 6/3), dry, very friable to nearly loose fine sandy loam with poorly developed fine granular structure. Roots are less numerous than in overlying horizon. A small amount of rounded pebbles present.
B_{21}	11-19	Mottled olive (5Y 5/3) red (2.5YR 4/8) and other colors, moist, light olive brown (2.5Y 5/4) and yellowish-red (5YR 4/8), dry, noncalcareous dense clay. Mottlings are of medium contrast. Extremely firm when moist, strongly plastic when wet and extremely hard when dry. Displaced pieces break into moderately developed coarse prismatic aggregates and these in turn break down readily into a weakly developed coarse blocky mass. This horizon also contains a small amount of rounded pebbles. Gradational boundary.
B_{22}	19-28	Olive gray (5Y 5/2) dense noncalcareous clay finely mottled with reddish-yellow (7.5YR 6/6); moderately developed coarse prismatic structure. Colors are essentially the same when moist as when dry. Under considerable pressure, the prisms break into a weakly developed coarse blocky mass. Extremely firm when moist, strongly plastic when wet, and extremely hard when dry. A few lime concretions and a small amount of pebbles are present. Gradational boundary.
B_3	28-33 1/2	Grayish-brown (2.5Y 5/2), with slight variegation in color, massive noncalcareous clay with few breakage planes. Colors are about the same moist or dry. Extremely firm when moist, strongly plastic when wet, and extremely hard when dry. Contains a few lime concretions and few rounded pebbles. Gradational boundary.
C	33 1/2-43	Grayish-brown (2.5Y 5/2), with slight variegation in color, massive calcareous dense clay with few breakage planes. Colors are essentially the same when moist as when dry. Extremely firm when moist, strongly plastic when wet, and extremely hard when dry. A small amount of rounded gravel is present in this layer also. Gradational boundary.
C	43-67	Pale olive (5Y 6/3) massive clay finely mottled with reddish-yellow (7.5YR 7/6), containing some lime concretions. It is firm when moist and strongly plastic when wet. Colors are essentially the same when moist as when dry.

Sampled and described by: Alexander, Martin, Shearin, Simonson and Templin; June, 1945.

PROFILE NO. 54

Axtell fine sandy loam, McLennan County, Texas.
Lab. Nos. 45555-561 (4544129-2-1 thru 7)--Average annual ppt. inches--33.41.

Depth inches	Size classes %								
	Clay	III	USDA silt	VFS	FS	MS	CS	VCS	Horizon
0-5	4.4	7.8	26.9	16.9	25.4	14.5	10.0	1.9	A_1
5-11	5.8	7.6	26.7	17.0	24.3	13.4	10.3	2.5	A_2
11-19	44.9	7.6	20.5	10.1	12.4	6.6	4.4	1.1	B_2
19-28	39.3	11.0	24.7	10.3	12.8	6.6	4.5	1.8	B_{31}
28-33.5	31.5	12.8	25.6	13.0	15.2	7.4	5.2	2.1	B_{32}
33.5-43	31.5	11.7	24.6	13.4	15.2	7.9	5.3	2.1	C
43-67	32.1	10.1	22.4	14.2	16.9	8.2	5.3	0.9	C

Depth inches	M.E./100 g soil						% B. sat	pH	% O.C.	P ppm
	Ca	Mg	K	Mn	H	S+				
0-5	2.1	.3	.0	T	1.1	3.5	69	6.5	.44	6.8
5-11	1.5	.4	.0	T	.8	2.7	70	6.0	.18	6.4
11-19	14.7	3.9	.6	T	9.9	29.1	66	4.8	.18	5.6
19-28	14.9	3.9	.3	T	7.2	26.3	73	4.9		5.6
28-33.5	15.2	3.7	.3	T	2.9	22.1	87	5.6		5.2
33.5-43	18.4	3.9	.3	T	.2	22.8	99	7.8		8.0
43-67	17.3	3.6	.3	T	.4	21.6	92	7.7		8.4

PROFILE NO. 55

Axtell fine sandy loam (45 44129-2)

Location: Kaufman County, Texas; 1-1/4 miles southwest of Scurry on State Highway No. 34 in a virgin cut-over area. This is on the highest terrace along the Trinity River and is about 3 miles east of the floodplain. In elevation it is about 80 feet above that of the floodplain. The area is in the eastern part of the Blackland Prairies of northeast Texas.

Topography: Plane surface of about 1 percent gradient in a smoothly dissected undulating, very high old stream terrace.

Vegetation: A scattering of medium size post oak and blackjack oak and a fairly thick growth of oak and winged elm sprouts with a small amount of sumac and other shrubs. There is also a scattering of short grasses and weeds in the more open spaces.

Horizon	Depth inches	Description
A_1	0-3 1/2	Very dark gray (10YR 3/1), moist, olive gray (5Y 5/2), dry, fine sandy loam with poorly developed granular structure. It is very friable when moist. There is a little variegation in color on cut surfaces when moist. Roots are moderately numerous. This grades into the horizon below.
A_2	3 1/2-11 1/2	Light yellowish-brown (10YR 6/4), moist, light gray (10YR 7/2), dry, nearly loose essentially structureless fine sandy loam; slight variegation in color when moist. Roots are common but not so numerous as in the overlying horizon. A transitional layer of friable light sandy clay loam, with a few small pebbles 5 to 10 mm. in diameter, 1-1-1/2 inches thick, forms the lower part of this horizon.
B_2	11 1/2-18 1/2	Finely mottled olive (5Y 5/3) and red (2.5YR 4/8) when moist; light yellowish-brown (2.5Y 6/4) and yellowish-red (5YR 5/6) when dry, noncalcareous clay with weakly developed medium blocky structure. It is friable when moist, moderately to strongly plastic when wet, and very hard when dry. Crushed surfaces are slightly lighter than uncrushed ones. Mottlings are of high contrast and are somewhat coarser in the lower part than in the upper part of the horizon.
B_{31}	18 1/2-33	Olive (5Y 5/3) non-calcareous clay mottled with red (2.5YR 4/8 to 10R 4/8) when moist; light yellowish-brown (2.5Y 6/4) mottled with yellowish-red (5YR 5/6) when dry; poorly developed medium blocky structure. Mottlings are of strong contrast and are medium in size. A few fine olive yellow mottlings (5Y 6/6) are present in the lower part of layer. Firm when moist, strongly plastic when wet, and very hard when dry.
B_{32}	33-51	Light olive gray non-calcareous clay (5Y 6/2) mottled red (2.5YR 4/8 to 10R 4/8) when moist; pale olive (5Y 6/4) mottled with red (2.5YR 4/8) when dry; poorly developed medium and coarse blocky structure. Mottlings are medium in size, numerous, and of strong contrast. The material is very firm when moist, strongly plastic when wet and very hard when dry.
C	51-63	Massive clay with color pattern of mottled light gray (5Y 7/1) and brownish-yellow (10YR 6/8) and with small spots of red (2.5YR 4/8) when moist; mottled light gray (5Y 7/1) and brownish-yellow (10YR 6/8) when dry. Very firm when moist, strongly plastic when wet, and very hard when dry. Mottlings are of medium contrast. Soil mass has a yellow appearance. Slightly calcareous in spots; few small pebbles present.
C	63-73	Massive heavy sandy clay loam in which there are pockets of clay. Colors are essentially the same as in the overlying layers. Small pebbles are more numerous than in layer above and small dark colored specks and splotches are common. Calcareous in spots; this is firm when moist and hard to very hard when dry.

Sampled and described by: Alexander, Martin, Shearin, Simonson and Templin; June 1945.

PROFILE NO. 55

Axtell fine sandy loam, Kaufman County, Texas.
Lab. Nos. 45587-593 (45 44155-2-1 thru 7)--Average annual ppt. inches--41.20.

Depth Inches	Size classes %								
	Clay	III	USDA silt	VFS	FS	MS	CS	VCS	Horizon
0-3.5	5.7	8.8	31.4	24.6	30.4	6.0	1.5	0.4	A_1
3.5-11.5	5.2	6.7	26.6	24.3	35.0	6.8	1.6	0.5	A_2
11.5-18.5	34.2	6.1	16.8	16.5	24.9	5.5	1.3	0.8	B_{21}
18.5-33	32.3	6.5	17.8	16.6	25.6	5.7	1.5	0.5	B_{22}
33-51	29.4	6.8	16.3	17.9	27.0	6.9	1.5	1.0	B_3
51-63	25.5	6.5	22.9	4.5	26.3	15.4	4.0	1.4	C
63-73	23.4	6.3	12.8	15.0	23.2	14.1	7.1	4.4	C

Depth Inches	M.E./100 g soil						% B. sat	pH	% O.C.	P ppm
	Ca	Mg	K	Mn	H	S+				
0-3.5	4.0	.8	.3	.02	1.3	6.4	80	6.0		4.8
3.5-11.5	1.6	.6	.2	T	1.4	3.8	63	5.4		.8
11.5-18.5	10.2	2.8	.3	T	8.2	21.5	62	4.9		4.0
18.5-33	10.7	2.4	.3	T-	7.0	20.4	66	4.8		2.4
33-51	11.3	2.1	.2	T-	4.5	18.1	75	5.2		1.2
51-63	12.9	2.1	.2	.01	2.4	17.6	87	5.7		2.0
63-73	12.5	1.8	.3	.01	1.4	16.0	91	6.5		1.2

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